Edition 20**20–21**

GENERAL APTITUDE

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Workbook

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GATE Syllabus

Common to All Papers

Verbal Ability : English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.

Numerical Ability : Numerical computation, numerical estimation, numerical reasoning and data interpretation.

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3	Letters-Word Arrangement	0:32:51
4	Team Formation	0:25:59
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1	Rapid Fire (1)	0:27:28
2	Rapid Fire (2)	0:14:19
3	Rapid Fire (3)	0:11:39

1 NUMBER SYSTEM

1.1 Agenda : Number of 0's at the end

Q.1 $100!, 150!, 250!$

1.2 Agenda : Unit Digit Value

Q.2 $2^{23}, 2^{51}, 3^{59}, 4^{99}, 3^{171}, 7^{208}$

Q.3 $12^{71}, 16^{51}, 21^{99}, 39^{235}, 17^{999}, 37^{897}, 127^{200899}$

Q.4 $13^{666} \times 44^{777} \times 616^{333} \times 777^{444} \times 8898^{222} \times 999^{555}$

Q.5 $1^2 + 2^2 + 3^2 + \ldots\ldots + 99^2 + 100^2$

Q.6 $1^1 + 2^2 + 3^3 + \ldots\ldots + 9^9 + 10^{10}$

Q.7 The numeral in the units position of $211^{870} + 146^{127} \times 3^{424}$ is _____

[GATE 2016 : IISc Bangalore (EE Set - 2)]

Q.8 The last digit of

$(2171)^7 + (2172)^9 + (2173)^{11} + (2174)^{13}$ is

(A) 2 (B) 4

(C) 6 (D) 8

[GATE 2017 : IIT Roorkee (CH, CE, Set - 1)]

1.3 Agenda : Last two Digits

Q.9 $21^{23}, 31^{53}, 51^{93}$

Q.10 $3^{23}, 7^{53}, 9^{93}$

Q.11 $2^{53}, 4^{83}, 8^{93}$

1.4 Agenda : Concepts of Remainders

Q.12 $\dfrac{(123 \times 1234)}{15}$

Q.13 $(1218 \times 1220 \times 1222 \times 1224) \div 9$

Q.14 $(1719 \times 1721 \times 1723 \times 1725 \times 1727) \div 18$

Q.15 The remainder when S is divided by 20 , where S = 1! + 2! + 3! + 4! + 5! + 6! + ……+ 19! + 20!

Q.16 The rightmost non- zero digit of the number 30^{2720}.

Q.17 $7^{77} \div 4$

Q.18 $11^{88} \div 7$

Q.19 $5^{123} \div 7$

Q.20 $7^{84} \div 342$

1.5 Agenda : Factorization

Q.21 Find : Number of factors , Sum of factors and Product of factors of the following :
12, 24, 288.

Q.22 How many factors of 12 are divisible by : 2, 3 , 4, 6 , 12.

Q.23 How many factors of 24 are divisible by : 2, 3 , 4, 6 , 8.

Q.24 Find the smallest number y such that : $y \times 162$ is a perfect cube.

(A) 24 (B) 27

(C) 32 (D) 36

[GATE 2017 : IIT Roorkee (EE, CS, Set - 1)]

1.6 Agenda : Divisibility

Q.25 If all the natural numbers starting from 1 are written side by side then find the : 25^{th} , 50^{th} , 100^{th} digit of the sequence.

Q.26 In the above question find the remainder when the sequences are divided by : 2,4,8,16 , 5 , 25 , 125 , 3 ,9

Q.27 If the number 715■423 is divisible by 3 (■ denotes the missing digit in the thousandths place), then the smallest whole number in the place of ■ is _____.

(A) 0 (B) 2

(C) 5 (D) 6

[GATE 2018 : IIT Guwahati (EC Set – 1)]

Q.28 How many numbers less than 21 are co-primes to 21?

(A) 24 (B) 96

(C) 11 (D) 12

1.7 Agenda : Important Notes

Q.29 If a and b are integers and $a-b$ is even, which of the following must always be even?

(A) ab (B) a^2+b^2+1

(C) a^2+b+1 (D) $ab-b$

[GATE 2017 : IIT Roorkee (ME Set – 2)]

Q.30 Given that a and b are integers and $a+a^2b^3$ is odd then, which one of the following statements is correct?

(A) a and b are both odd

(B) a and b are both even

(C) a is even and b is odd

(D) a is odd and b is eve

[GATE 2018 : IIT Guwahati (ME Set – 1)]

Q.31 If x = - 0.5, then which of the following has the smallest value?

(A) $2^{1/x}$ (B) $\frac{1}{x}$

(C) $\frac{1}{x^2}$ (D) 2x

Q.32 The sum of the digits of a two-digit number is 12. If the new number formed by reversing the digits is greater than the original number by 54, find the original number.

(A) 39 (B) 57

(C) 66 (D) 93

[GATE 2016 : IISc Bangalore (CE Set - 2)]

Q.33 A number is as much greater than 75 as it is smaller than 117. The number is:

(A) 91 (B) 93

(C) 89 (D) 96

[GATE 2013 : IIT Bombay (CE)]

Q.34 A number consists of two digits, the sum of digits is 9. If 45 is subtracted from the number, its digits are interchanged. What is the number?

(A) 63 (B) 72

(C) 81 (D) 90

[GATE 2018 : IIT Guwahati (ME Set – 1)]

Q.35 The sum of eight consecutive odd numbers is 656. The average of four consecutive even numbers is 87. What is the sum of the smallest odd number and second largest even number?

[GATE 2014 : IIT Kharagpur

(EC Set – 2, ME Set - 2)]

Q.36 In a sequence of 12 consecutive odd numbers, the sum of the first 5 numbers is 425. What is the sum of the last 5 numbers in the sequence?

[GATE 2014 : IIT Kharagpur

(EC Set - 4, ME Set - 4)]

1.8 Agenda : Challenge Questions

Direction (37 – 40) : Given, m = 1! + 2! + 3! + 4! +..... + 99! + 100!

Q.37 Find the unit digit of "m"

Q.38 Find the last two digits of 'm'

Q.39 Find the remainder, when 'm' is divided by 168.

Q.40 If N is a natural number such that $10^{12} < N < 10^{13}$ and the sum of the digits of n is 2 , then the number of values n take is :

Q.41 Which among $2^{1/2}$, $3^{1/3}$, $4^{1/4}$, $6^{1/6}$ and $12^{1/12}$ is the largest ?

(A) $2^{1/2}$ (B) $3^{1/3}$

(C $4^{1/4}$ (D) $6^{1/6}$

Q.42 If $\frac{a}{b}=\frac{1}{3},\frac{b}{c}=2,\ \frac{c}{d}=\frac{1}{2},\frac{d}{e}=3$ *and* $\frac{e}{f}=\frac{1}{4}$, then what is the value of $\frac{abc}{def}$? **(2006)**

(A) $\frac{3}{8}$ (B) $\frac{27}{8}$

(C) $\frac{3}{4}$ (D) $\frac{27}{4}$

Q.43 S is a 6 digit number beginning with 1 . If the digit 1 is moved from the leftmost place to the rightmost place the number obtained is three times of S . Then the sum of the digits of S is-

Q.44 If N = 15 × 30 × 45 × 60 × ……..× 1500, what will be the number of zeroes at the end of N?

(A) 63 (B) 55

(C) 97 (D) 124

[GATE 2016 : IISc Bangalore (CE Set – 2)]

Q.45 Let x, y and z be distinct integers, that are odd and positive. Which one of the following statements cannot be true?

(A) xyz^2 is odd

(B) $(x-y)^2 z$ is even

(C) (x+y-z) (x+y) is even

(D) (x-y) (y+z) (x+y-z) is odd

(E) None of these

❖❖❖❖

A Answer Keys

1.	24, 37, 62	2.	8, 8, 7, 4, 7, 1	3.	8, 6, 1, 9, 3, 7, 3
4.	6	5.	0	6.	7
7.	7	8.	B	9.	61, 91, 51
10.	27, 07, 29	11.	92, 64, 88	12.	12
13.	0	14.	9	15.	13
16.	1	17.	3	18.	3
19.	6	20.	1	21.	(a) 6, 28, 1728 (b) 8, 60, 24^4 (c) 18, 819, 288^9
22.	4, 3, 2, 2, 1	23.	6, 4, 4, 3, 2	24.	D
25.	7, 3, 5	26.	(a) 1, 1, 1, 1, 2, 17, 117, 0, 0 (b) 1, 1, 5, 5, 3, 18, 43, 0, 6 (c) 1, 1, 1, 9, 0, 20, 45, 3, 5	27.	B
28.	D	29.	D	30.	D
31.	B	32.	A	33.	D
34.	B	35.	163	36.	495
37.	3	38.	13	39.	33
40.	13	41.	B	42.	A
43.	27	44.	C	45.	D

❖❖❖❖

2 PERMUTATION COMBINATION & PROBABILITY

2.1 Agenda : Addition & Multiplication

Q.1 Using the digits : 1,2,3,4 and 5 how many three digit numbers can be formed :

(A) Repetition allowed.

(B) Repetition not allowed.

Q.2 Using the digits : 0,1,2,3,4 and 5 how many three digit numbers can be formed :

(A) Repetition allowed.

(B) Repetition not allowed.

Q.3 How many four digit numbers can be formed with the 10 digits 0, 1, 2, ... 9 if no number can start with 0 and if repetitions are not allowed?

[GATE 2015 : IIT Kanpur (CE Set - 2)]

Q.4 How many numbers between 0 and 1 million can be formed using 0, 7 and 8?

(A) 486 (B) 1086

(C) 728 (D) 900

[GATE 2014 : IIT Kharagpur]

Q.5 How many 3 digit no. are there from100 – 1000

(A) All three digits prime and distinct.

(B) All 3 digits odd.

Q.6 Using the digits : 1,2,3,4 and 5 how many three digit numbers can be formed , such that it must have :

(A) Exactly one 5

(B) EAxactly two 5

(C) At least one 5

Q.7 Using the digits : 0,1,2,3,4 and 5 how many three digit numbers can be formed , such that it must have :

(A) Exactly one 5

(B) Exactly two 5

(C) At least one 5

Q.8 Using the digits : (1) 1,2,3,4,5,6,7,8 and 9 (2) 0, 1,2,3,4,5,6,7,8 and 9 how many three digit numbers can be formed , such that it must have :

(A) Exactly one 7

(B) Exactly two 7

(C)_At least one 7

Q.9 Using the digits : (1) 1,2,3,4 and 5 (2) 0, 1,2,3,4 and 5 how many three digit numbers can be formed , such that :

(A) The ten's place is greater than the unit's place digit .

(B) The ten's place is greater than the unit's place digit and less the hundred's place digit.

Q.10 Using the digits : (1) 1,2,3,4,5,6,7,8 and 9 (2) 0, 1,2,3,4,5,6,7,8 and 9 how many three digit numbers can be formed , such that :

(A) The ten's place is greater than the unit's place digit.

(B) The ten's place is greater than the unit's place digit and less the hundred's place digit.

2.2 Agenda : Letters Arrangement

Q.11 How many different words can be formed from the letters of the word GANESHPURI when:

(A) All the letters are taken.

(B) The letter G always occupies the first place.

(C) The letters P and E respectively occupy the first and last places.

(D) All the vowels are always together.

(E) How many words of 5 letters each can be formed each containing 3 consonants and 2 vowels?

(F) All the vowels are never together.

(G) No 2 vowels are together.

2.3 Agenda : Team Formation

Q.12 How many committees of 5 members each can be formed from 8 official and 4 non-official members in the following cases :

(A) Each consisting of 3 official and 2 non-official members.

(B) Each contains at least two non-official members.

(C) Each consisting of at most two official members.

(D) A particular official member is always included.

(E) A particular non-official member is never included.

Q.13 Out of 8 men and 10 women a committee consisting of 6 men and 5 women is to be formed. How many such committees can be formed when one particular man A refuses to be a member of the committee is which his boss B's wife is there?

Q.14 There are 4 women *P*, *Q*, *R*, *S* and 5 men *V*, *W*, *X*, *Y*, *Z* in a group. We are required to form pairs each consisting of one woman and one man. P is not to be paired with *Z*, and *Y* must necessarily be paired with someone. In how many ways can 4 such pairs be formed?

(A) 74 (B) 76

(C) 78 (D) 80

[GATE 2017 : IIT Roorkee (ME Set – 2)]

Q.15 A three-member committee has to be formed a group of 9 people. How many such distinct committees can be formed?

(A) 27 (B) 72

(C) 81 (D) 84

[GATE 2018 : IIT Guwahati (CE Set – 2)]

Q.16 An e-mail password must contain three characters. The password has to contain one numeral from 0 to 9, one upper and one lower case character from the English alphabet. How many distinct passwords are possible?

(A) 6,760 (B) 13,520

(C) 40,560 (D) 1,05,456

[GATE 2018 : IIT Guwahati (EE Set – 1)]

Q.17 Arun, Gulab, Neel and Sweta must choose one shirt each from a pile of four shirts coloured red, pink, blue and white respectively. Arun dislikes the colour red and Sweta dislikes the colour white. Gulab and Neel like all the colours. In how many different ways can they choose the shirts so that no one has a shirt with a colour he or she dislikes?

(A) 21 (B) 18

(C) 16 (D) 14

[GATE 2017 : IIT Roorkee (EE, CS, Set – 1)]

2.4 Agenda : Question paper wala Question (Binomial)

Q.18 A candidate is required to answer 7 out of 15 questions which are divided into three groups A,B,C each containing 4, 5 , 6 questions respectively. He is required to select at least 2 questions from each group. In how many ways can he make up his choice?

Q.19 There are 3 Indians and 3 Chinese in a group of 6 people. How many subgroups of this group can we choose so that every subgroup has at least one Indian?

(A) 56 (B) 52

(C) 48 (D) 44

[GATE 2017 : IIT Roorkee (EC, BT, PI Set – 1)]

2.5 Agenda : Number Sum

Q.20 What is the sum of all 4 digit numbers which can be formed using the digits 1,2,3 and 4 without repetition?

Q.21 What is the sum of all 5 digit numbers which can be formed using the digits (exactly once):

(A) 1,2,3,4 and 5. (B) 1,1,2,3 and 4.

(C) 1,1,2,2 and 2 (D) 0,1,2,3 and 4.

(E) 0,1,1, 2 and 3.

Q.22 A five digit number is formed using the digits 1,3,5,7 and 9 without repeating any of them. What is the sum of all such possible five digit numbers?

(A) 6666660 (B) 6666600

(C) 6666666 (D) 6666606

[GATE 2014 : IIT Kharagpur (EC Set – 4, ME Set - 4)]

2.6 Agenda : Linear and Circular Arrangement

Q.23 In how many ways may 6 Hindi medium students and 6 English medium students sit :

(A) In a line

(B) Around a round table such that two Hindi medium students may never sit together?

Q.24 Four cards lie on a table. Each card has a number printed on one side and a colour on the other. The faces visible on the cards are 2, 3, red and blue.

Proposition : If a card has an even value one side, then its opposite face is red.

The cards which MUST be turned over to verify the above proposition are

(A) 2, red (B) 2, 3, red

(C) 2, blue (D) 2, red, blue

[GATE 2017 : IIT Roorkee (IN, CE, Set – 2)]

2.7 Agenda : Straight Lines, Triangles, Chess Board, Handshake & Gift Exchange

Q.25 How many diagonals are there in an n side polygon.

Q.26 Find the number of :

(A) Straight Lines

(B) Diagonals

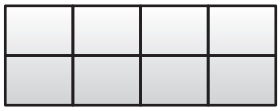
(C) Triangles formed in a decagon.

Q.27 Out of 18 points in a plane, no three are in the same straight line except five points which are collinear. How many

(A) Straight lines

(B) Triangles can be formed by joining them?

Q.28 A 2 × 4 rectangle grid shown below, each cell is a rectangle. How many rectangles can be observed in the grid?



(A) 21 (B) 27

(C) 30 (D) 36

[GATE 2016 : IISc Bangalore (EE Set - 1, CSE Set - 1)]

Q.29 A set of 4 parallel lines intersect with another set of 5 parallel lines. How many parallelograms are formed?

(A) 20 (B) 48

(C) 60 (D) 72

[GATE 2018 : IIT Guwahati (IN Set – 1)]

Q.30 Everybody in a room shakes hands with everybody else. The total number of hand shakes is 66. The total number of persons in the room is 12. True or False ?

Q.31 In a football championship, there were played 153 matches. Every two teams played one match with each other. The number of teams. Participating in the championship is ……

Q.32 930 Deepawali greeting cards are exchanged amongst the students of a class. If every student sends a card to every other student then what is the number of students in the class?

Q.33 Five teams have to compete in a league, with every team playing every other team exactly once, before going to the next round. How many matches will have to be held complete the league round of matches?

(A) 20 (B) 10

(C) 8 (D) 5

[GATE 2015 : IIT Kanpur (ME Set - 3, IN)]

2.8 Agenda : Dictionary Word

Q.34 If all the letters of the word 'AGAIN' be arranged as per English dictionary , what is the 50^{th} word.

2.9 Agenda : Important Notes

Q.35 How many word can be formed by taking 4 letters at a time out of the letters of the word MATHEMATICS ?

Q.36 A five digit number is formed using the digits 1,3,5,7 and 9 without repeating any of them. What is the sum of all such possible five digit numbers?

(A) 6666660 (B) 6666600

(C) 6666666 (D) 6666606

[GATE 2014 : IIT Kharagpur (EC Set – 4, ME Set - 4)]

2.10 Agenda : Probability
Agenda : Concept Builder - I

Q.37 An unbiased die is thrown. What is the probability of getting -

(A) An even number

(B) A multiple of 3.

(C) An even number or a multiple of 3

(D) An even number and a multiple of 3.

Q.38 2 Dice are thrown are simultaneously. Find the probability of getting:

(A) An even no. as the sum.

(B) The sum as a prime no.

(C) A total of at least 10.

(D) A multiple of 2 on 1 dice and multiple of 3 on the other.

Q.39 3 dice are thrown together. Find the probability of getting sum of :

(A) At least 6

(B) At most 6

(C) Exactly 6

Q.40 Find the probability that a leap year selected at random , will have:

(A) 53 Sun

(B) 53 Sun & 53 Mon

(C) 52 Sun

(D) 52 Sun & 53 Mon

(E) 52 Sun & 52 Mon

(F) 52 Sun& 53 Tue

(G) 52 Sun& 52 Tue.

Q.41 What is the probability that a no. selected from the nos. 1-100 (both inclusive) is :

(A) A Prime no.

(B) Is a composite no.

(C) A perfect square

(D) A perfect Integer

(E) Multiple of 2

(F) Multiple of 4

(G) Multiple of 3

Q.42 Out of all the 2-digit integers between 1 and 100, a 2-digit number has to be selected at random. What is the probability that the selected number is not divisible by 7?

(A) 13/90 (B) 12/90

(C) 78/90 (D) 77/90

[GATE 2013 : IIT Bombay (CSE, ME)]

Q.43 Two dice are thrown simultaneously. The probability that the product of the numbers appearing on the top faces of the dice is a perfect square is

(A) $\frac{1}{9}$ (B) $\frac{2}{9}$

(C) $\frac{1}{3}$ (D) $\frac{4}{9}$

[GATE 2017 : IIT Roorkee (IN, CE Set – 2)]

Q.44 Given set A = {2, 3, 4, 5} and Set B = {11, 12, 13, 14, 15}, two numbers are randomly selected, one from each set. What is probability that the sum of the two numbers equals 16?

(A) 0.20 (B) 0.25

(C) 0.30 (D) 0.33

[GATE 2015 : IIT Kanpur (EE Set - 1, CSE Set - 1)]

Q.45 The probability that a k-digit number does NOT contain the digits 0, 5 or 9 is

(A) 0.3^k (B) 0.6^k

(C) 0.7^k (D) 0.9^k

[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]

Q.46 A couple has 2 children. The probability that both children are boys if the older one is a boy is

(A) $\frac{1}{4}$ (B) $\frac{1}{3}$

(C) $\frac{1}{2}$ (D) 1

[GATE 2017 : IIT Roorkee (ME Set – 2)]

Q.47 What is the chance that a leap year, selected at random, will contain 53 Saturdays?

(A) 2/7 (B) 3/7

(C) 1/7 (D) 5/7

[GATE 2013 : IIT Bombay (EC, EE, IN)]

Q.48 One card is drawn from a pack of 52 cards , each of the 52 cards are equally likely to be drawn. Fin the probability that the card drawn is :

(A) An Ace

(B) Red

(C) Either Ace or Red

(D) Ace & Red

Q.49 4 persons are to be chosen at random from a group of 3men , 4 women and 4 children. Find the probability of selecting:
(A) 1 man , 1 woman and 2 children.
(B) 2 Women.
(C) At least 2 women.
(D) At most 2 women .

Q.50 The letters of the word 'SOCIETY' are placed at random in a row. What is the probability that:
(A) All the vowels are together.
(B) All the vowels are never together.
(C) No 2 vowels are together.
(D) "SOIT" are always together.

Q.51 2 integers are selected at random from integers 1-11. If the sum is even , find the probability that :
(A) Both the integers are odd.
(B) Both the integers are even.

Q.52 A bag contains 6 white, 5 red and 4 black balls. If two balls are drawn at random, what is the probability that none is white?
(A) $\frac{1}{3}$ (B) $\frac{3}{5}$
(C) $\frac{12}{35}$ (D) $\frac{13}{16}$

Q.53 There are 3 red socks, 4 green socks and 3 blue socks. You choose 2 socks. The probability that they are of the same colour is
(A) $\frac{1}{5}$ (B) $\frac{7}{30}$
(C) $\frac{1}{4}$ (D) $\frac{4}{15}$

[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]

Q.54 Two dice are rolled one after the other. The probability that the number on the first is smaller than the number on second
(A) $\frac{1}{2}$ (B) $\frac{7}{18}$
(C) $\frac{3}{4}$ (D) $\frac{2}{12}$

Q.55 A regular die has six sides with numbers 1 to 6 marked on its sides. If a very large number of throws show the following frequencies of occurrence: 1–0.167; 2–0.167; 3–0.152; 4–0.166; 5–0.168; 6 –0.180. We call this die
(A) Irregular (B) Biased
(C) Gaussian (D) Insufficient

[GATE 2014 : IIT Kharagpur (EC Set - 2, ME Set - 2)]

Q.56 A coin tossed thrice. Let X be the event that head occurs in each of the first two tosses. Let Y be the event that a tail occurs on the third toss. Let Z be the event that two tails occurs in three tosses. Based on the above information, which one of the following statements is TRUE?
(A) X and Y are not independent
(B) Y and Z are dependent
(C) Y and Z are independent
(D) X and Z are independent

[GATE 2015 : IIT Kanpur (ME Set - 3, IN)]

2.10.1 Agenda : Probability
Agenda : Concept Builder - II

Q.57 A problem in statistics is given to three students A, B and C whose chances of solving it are 1/2, 1/3 and 1/4 respectively. The probability that the problem will be solved is
(A) $\frac{3}{4}$ (B) $\frac{1}{24}$
(C) $\frac{1}{4}$ (D) $\frac{1}{2}$

Q.58 An unbiased coin is tossed six times in a row and four different such trials are conduced. One trial implies six tosses of the coin. If H stands for head and T stands for tail, the following are the observations from the four trials :
(1) HTHTHT (2) TTHHHT
(3) HTTHHT (4) HHHT_ _
Which statement describing the last two coin tosses of the fourth trial has the higher probability of being correct?
(A) Two T will occur
(B) One H and one T will occur
(C) Two H will occur
(D) One H will be followed by one T.

[GATE 2018 : IIT Guwahati (ME Set – 2)]

Q.59 Ram and Ramesh appeared in an interview for two vacancies in the same department. The probability of Ram's selection is 1/6 and that of Ramesh is 1/8. What is the probability that only one of them will be selected?
(A) $\frac{47}{48}$ (B) $\frac{1}{4}$
(C) $\frac{13}{48}$ (D) $\frac{35}{48}$

[GATE 2015 : IIT Kanpur (EC Set - 2, ME Set - 1)]

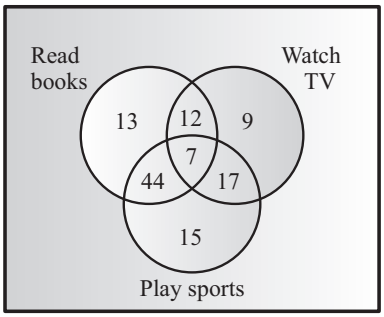
Q.60 You are given three coins: one has heads on both faces, the second has tails on both faces, and the third has a head on one face and a tail on the other. You choose a coin at random and toss it, and it comes up heads. The probability that the other face is tails is

(A) 1/4 (B) 1/3

(C) 1/2 (D) 2/3

[GATE 2014 : IIT Kharagpur (EC Set - 1, ME Set - 1)]

Q.61 The Venn diagram shows the preference of the student population for leisure activities.



From the data given, the number of students who like to read books or play sports is ____.

(A) 44 (B) 51

(C) 79 (D) 108

[GATE 2016 : IISc Bangalore (EC Set - 2, ME Set- 3)]

Q.62 The probabilities of the three doctors A, B and C getting success in an operation are 0.5, 0.2 and 0.3 respectively. Find the probability that the operation is not successful.

(A) 0.78 (B) 0.64

(C) 0.56 (D) 0.28

Q.63 If 5 unbiased coins are tossed, what is the probability of getting even number of heads?

(A) 1/2 (B) 1/5

(C) 5/32 (D) 15/32

Q.64 A class of twelve children has two more boys than girls. A group of three children are randomly picked from this class to accompany the teacher on a field trip. What is the probability that the group accompanying the teacher contains more girls than boys?

(A) 0 (B) $\frac{325}{864}$

(C) $\frac{525}{864}$ (D) $\frac{5}{12}$

[GATE 2018 : IIT Guwahati (EE Set – 1)]

Q.65 An automobile plant contracted to buy shock absorbers from two suppliers X and Y. X supplies 60% and Y supplies 40% of the shock absorbers. All shock absorbers are subjected to a quality test.

The ones that pass the quality test are considered reliable. Of X's shock absorbers, 96% are reliable. Of Y's shock absorbers, 72% are reliable. The probability that a randomly chosen shock absorber, which is found to be reliable, is made by Y is

(A) 0.288 (B) 0.334

(C) 0.667 (D) 0.720

[GATE 2012 : IIT Delhi (ME, CE, CSE)]

Q.66 Shaquille O' Neal is a 60% career free throw shooter, meaning that he successfully makes 60 free throws out of 100 attempts on average. What is the probability that he will successfully make exactly 6 free throws in 10 attempts?

(A) 0.2508 (B) 0.2816

(C) 0.2934 (D) 0.6000

[GATE 2016 : IISC Banglore (EE Set - 2)]

Q.67 A batch of one hundred bulbs is inspected by testing four randomly chosen bulbs. The batch is rejected if even one of the bulbs is defective. A batch typically has five defective bulbs. The probability that the current batch is accepted is _____.

[GATE 2014 : IIT Kharagpur (EC Set - 3, ME Set - 3)]

Q.68 In any given year, the probability of an earthquake greater than Magnitude 6 occurring in the Garhwal Himalayas is 0.04. The average time between successive occurrences of such earth quakes is _____ years.

[GATE 2014 : IIT Kharagpur (CE Set - 2, IN)]

Q.69 10% of the population in a town is HIV+. A new diagnostic kit for HIV detection is available; this kit correctly identifies HIV+ individuals 95% of the time, and HIV– individuals 89% of the time. A particular patient is tested using this kit and is found to be positive. The probability that the individual is actually positive is_____.

[GATE 2014 : IIT Kharagpur (CE Set - 2, IN)]

2.11 Agenda : Challenge Question

Q.70 A die is rolled three times. The probability of getting a larger number than the previous number each time is

(A) 7/54 (B) 5/54

(C) 11/54 (D) 6/54

Q.71 There are 30 coins out of which 20 are biased. Of these 20 biased coins, 15 always show head while the rest always show tail. The probability of getting atleast 14 tails in a single throw of 30 coins is

(A) 10×2^{-10} (B) 11×2^{-10}

(C) 10×2^{-30} (D) 11×2^{-30}

Q.72 A and B are friends. They decide to meet between 1 PM and 2 PM on a given day. There is a condition that whoever arrives first will not wait for the other for more than 15 minutes. The probability that they will meet on that day is

(A) 1/4 (B) 1/16

(C) 7/16 (D) 9/16

[GATE 2012 : IIT Delhi (EC, EE)]

Q.73 In a Las Vegas Casino, 3 games were played.

(A) A bet on tossing of 2 unbiased coins.

(B) A bet on drawing a card from a pack of 52 cards.

(C) A bet on the sum of the scores of the top face of 2 die.

Each of the above events occur at random. A ' Mechanical ark' was programmed to conduct the 3 events simultaneously. What is the probability of getting atleast 1` head, a picture card and a sum below 9 (in the game of dice) ?

(A) 5/52 (B) 1/4

(C) 1/36 (D) 1/8

Q.74 A five digit number is formed by the digits 1, 2, 3, 4, 5 without repetition. The probability that the number formed is divisible by 4 is

(A) 1/5 (B) 2/4

(C) 2/3 (D) 4/5

Q.75 In a plane, 5 lines of lengths 2, 3, 4, 5, and 6 cm are lying. What is the probability that by joining then three randomly chosen lines end to end a triangle cannot be formed?

(A) 3/10 (B) 7/10

(C) 1/2 (D) 1

Q.76 In a class exam, possible grades A, B, C and D are equally probable for any student. If A, B, C are passing grades and D is a fail grade then in a class of 100, what is the probability that at least 2% of the class will get grade D?

(A) $\frac{^{100}C_2\left(\frac{1}{4}\right)^2}{400}$ (B) $1-\left(\frac{3}{4}\right)^{100}$

(C) $1-\left(\frac{3}{4}\right)^{100}-25\left(\frac{3}{4}\right)^{99}$ (D) None of these

Q.77 In a card game six cards (2 Aces, 2 Kings and 2 Queens of different suits) are distributed among three people such that the first card of every person is kept face down while the other card is kept open. The person whose closed card is the highest wins the game. The probability that there is no winner in the game is

(A) 1/10 (B) 3/20

(C) 3/10 (D) 1/5

❖❖❖❖

A Answer Keys

Permutation Combination & Probability									
1.	(A) 125 (B) 60	2.	(A) 180 (B) 100	3.	4536	4.	C	5.	(A) 24 (B) 60
6.	(A) 48 (B) 12 (C) 61	7.	(A) 65 (B) 14 (C) 80	8.	(A) 192, 225 (B) 24, 26, (C) 217, 252	9.	(A) 50, 75 (B) 10, 20	10.	(A) 324, 405 (B) 841, 120
11.	*	12.	*	13.	4410	14.	C	15.	D
16.	C	17.	D	18.	16302	19.	A	20.	66660
21.	*	22.	B	23.	*	24.	V	25.	$nC_2 - n$
26.	*	27.	*	28.	C	29.	C	30.	12
31.	18	32.	31	33.	B	34.	NAIIG	35.	2454
36.	B	37.	*	38.	*	39.	*	40.	*
41.	*	42.	D	43.	B	44.	A	45.	C
46.	C	47.	A	48.	*	49.	*	50.	*
51.	(A) $\frac{3}{5}$ (B) $\frac{2}{5}$	52.	C	53.	D	54.	D	55.	B
56.	B	57.	A	58.	B	59.	B	60.	B
61.	D	62.	D	63.	A	64.	* $\frac{4}{11}$	65.	B
66.	A	67.	0.8145	68.	25	69.	0.475	70.	B
71.	B	72.	C	73.	D	74.	A	75.	A
76.	C	77.	C						
11*	(A) 10! (B) 9! (C) 8! (D) 7!×4! (E) $6C_3 \cdot 4C_2 \cdot 5!$ (F) $10! - 7! \cdot 4!$ (G) $7! \cdot 8C_4 \cdot 4!$					12*	(A) 336 (B) 456 (C) 120 (D) 462 (E) 330		
21*	(A) 3999960 (B) 1333320 (C) 177776 (D) 2599980 (E) 699993					23	(A) 12! (B) $6! \cdot 7C_6 \cdot 6!$		
26*	(A) 45 (B) 35 (C) 120					27*	(A) 139 (B) 806		
37*	(A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{1}{6}$ (D) $\frac{2}{3}$					38*	(A) $\frac{1}{2}$ (B) $\frac{5}{12}$ (C) $\frac{1}{6}$ (D) $\frac{11}{36}$		
39*	(A) $\frac{103}{108}$ (B) $\frac{5}{108}$ (C) $\frac{5}{54}$					40*	(A) $\frac{2}{7}$ (B) $\frac{1}{7}$ (C) $\frac{5}{7}$ (D) $\frac{1}{7}$ (E) $\frac{4}{7}$ (F) $\frac{2}{7}$ (G) $\frac{3}{7}$		
41*	(A) $\frac{1}{4}$ (B) $\frac{37}{50}$ (C) $\frac{1}{10}$ (D) $\frac{1}{50}$ (E) $\frac{1}{2}$ (F) $\frac{1}{4}$ (G) $\frac{33}{100}$					48*	(A) $\frac{1}{13}$ (B) $\frac{1}{2}$ (C) $\frac{7}{13}$ (D) $\frac{1}{26}$		
49*	(A) $\frac{72}{7920}$ (B) $\frac{126}{7920}$ (C) $\frac{155}{7920}$ (D) $\frac{301}{7920}$					50*	(A) 720 (B) 4,320 (C) 1440 (D) 576		

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3 TSD, WORK & TIME

3.1 Agenda : TSD Average Speed

Q.1 A train runs at the rate of 45 km per hour. What is its speed in metres per second?

Q.2 A motor car takes 50 seconds to travel 500 metres. What is its speed in km per hour

Q.3 A bird flying 400 km covers the first 100km at the rate of 100km/hr, the second 100km at 200km/hr ,the third100km at the rate of 300km/hr and the last 100 km at the rate of 400km/hr. Determine the average speed of the bird.

Q.4 A car travels 8 km in the first quarter of an hour, 6 km in the second quarter and 16 km in the third quarter. The average speed of the car in km per hour over the entire journey is

(A) 30 (B) 36

(C) 40 (D) 24

[GATE 2013 : IIT Bombay (EC, EE, IN)]

Q.5 A tourist covers half of his journey by train at 60 km/h, half of the remainder by bus at 30 km/h and the rest by cycle at 10 km/h. The average speed of the tourist in km/h during his entire journey is

(A) 36 (B) 30

(C) 24 (D) 18

[GATE 2013 : IIT Bombay (ME, CSE)]

Q.6 If Tushar goes from Delhi to Noida at a speed of 30 km per hour and comes back at a speed of 70 km per hour, then what is his average speed during the entire journey?

Q.7 An automobile travels from city A to city B and returns to city A by the same route. The speed of the vehicle during the onward and return journeys were constant at 60 km/h and 90 km/h respectively. What is the average speed in km/h for the entire journey?

(A) 72 (B) 73

(C) 74 (D) 75

[GATE 2018 : IIT Guwahati (IN Set – 1)]

3.2 Agenda : Time Difference

Q.8 If Arun rides his scooter at a speed of 20 kmph, then he reaches his office 5 minutes late. If he rides at 30kmph then he reaches 5 minutes early. Find the distance between his home and office.

Q.9 Walking at $5/7^{th}$ of his usual rate, a man reaches the, market 16 minutes late. Find his usual time taken to reach the market.

Q.10 Walking at $12/11^{th}$ of his usual rate, a man takes 5 minutes less to reach his office. Find his usual time taken to reach the office.

Q.11 A train running between two towns arrives at its destination 10 minutes late when it goes at 60 km per hour and 16 minutes. late when it goes at 40 km per hour. Determine the distance between the two towns.

Q.12 A train running between two towns arrives at its destination 10 minutes late when it goes at 60 km per hour and 16 minutes. late when it goes at 40 km per hour. Determine the distance between the two towns.

Q.13 A train has 320 km to run. After going $1/5^{th}$ of the distance, the engine breaks down and it can only run the remaining part of the journey at $3/4^{th}$ of the original speed. If it arrives 2hrs 40minlate, what was its original speed?

(A) 24 km/hr (B) 32 km/hr
(C) 48 km/hr (D) 64 km/hr

Q.14 A man travelled a distance of 61 km in 9 hours partly on foot at the rate of 4 km per hour and partly on bicycle at the rate of 9 km per hour. Find the distance travelled on foot.

3.3 Agenda : Relative Speed

Q.15 A carriage driving in a fog passed a man who was walking at the rate of 3 kmph in the same direction, if he could see the carriage for 4 minutes and if it was visible to him up to a distance of 100 m then what was the speed of the carriage?

(A) 3.6 kmph (B) 4.5 kmph
(C) 3.5 kmph (D) None of these

Q.16 A train, 140 metres long, moves at the rate of 36kmph. How long will it take to pass a certain telegraph pole? (The height of the pole is 2 m).

Q.17 It takes 10 s and 15 s, respectively, for two trains travelling at different constant speeds to completely pass a telegraph post. The length of the first train is 120 m and that of the second train is 150 m. The magnitude of the difference in the speeds of the two trains (in m/s) is _____.

(A) 2.0 (B) 10.0
(C) 12.0 (D) 22.0

[GATE 2016 : IISC Banglore (IN)]

Q.18 A train that is 280 metres long, travelling at a uniform speed, crosses a platform in 60 seconds and passes a man standing on the platform in 20 seconds. What is the length of the platform in metres?

[GATE 2014 : IIT Kharagpur (EC Set - 1, ME Set - 1)]

Q.19 From the time the front of a trains enters a platform, it takes 25 sec for the back of the train to leave the platform, while train travelling at a constant speed of 54 km/h. At the same speed, it takes 14 sec to pass a man running at 9 km/h in the same direction as the train. What is the length of the train and that of the platform in meters respectively?

(A) 210 & 140 (B) 162.5 & 187.5
(C) 245 & 130 (D) 175 & 200

[GATE 2018 : IIT Guwahati (ME Set – 1)]

Q.20 The distance between two cities A and B is 80km. A motorcycle rider starts from A towards B at 7am at a speed of 10 km/hr. Another motorcyclist starts from B towards A at 8am at a speed of 25km/hr. At what time will they cross each other?

Q.21 Two trains start at the same time from two stations and proceed towards each other at the rate of 20 km/hr and 25km/hr respectively. When they meet, it is found that one train has travelled 80km more than the other. Find the distance between the two stations.

Q.22 Michael lives 10 km away from where I live. Ahmed lives 5 km away and Susan lives 7 km away from where I live. Arun is farther away then Ahmed but closer than Susan from where I live. From the information provided here, what is one possible distance (in km) at which I live from Arun's place?

(A) 3.00 (B) 4.99
(C) 6.02 (D) 7.01

[GATE 2016 : IISC Banglore (EC Set - 1)]

Q.23 Two trains start at the same time from Aligarh and Delhi and proceed towards each other at the rate of 16 km/hr and 21 km/hr respectively. When they meet , it is found that one train has travelled 60 km more than the other. The distance between the two stations is

(A) 445 km (B) 444 km
(C) 440 km (D) 450 km

Q.24 A tiger is 50 leaps of its own behind a deer. The tiger takes 5 leaps per minute to the deer's 4. If the tiger and the deer cover 8 meter and 5 meter per leap respectively, what distance in meters will the tiger have a run before it catches the deer?

[GATE 2015 : IIT Kanpur (EC Set – 2, ME SET - 1)]

3.4 Agenda : Challenge Questions

Q.25 Distance between A and B is 72 km. Two men started walking from A and B at the same time towards each other. The person who started from A travelled uniformly with average speed 4 km/h. While the other man travelled with varying speed as follows: In first hour, his speed was 2 km/h, in the second hour, it was 2.5 km/h. in the third hour, it was 3 km/h, and so on. When will they meet each other?

(A) 7h
(B) 10 h
(C) 35 km from A
(D) Midway between A & B

Directions (26-28) : read the data given below and answer the questions that follow.

Two trains start from the opposite stations A and B, 100 m apart at the same time. A bird flies from the faster train towards the slower one starting at the same time. The velocities of the two trains and the bird are in G.P. the bird being the fastest. The bird reaches the second train in 10 sec and then immediately flies back towards the faster train. It continues this till the two trains meet after 50/3 sec.

Q.26 What is the velocity of the slower train?

(A 1 m/sec (B) 2 m/sec
(C) 3 m/sec (D) 4 m/sec

Q.27 What is the velocity of the bird?

(A) 6m/sec (B) 7 m/sec
(C) 8 m/sec (D) 9 m/sec

Q.28 After how many seconds from where the bird first started flying does the bird again reach the faster train?

(A) 20/3 sec (B) 10 sec
(C) 40/3 sec (D) 50/3 sec

Q.29 What will be the total distance travelled by the bird till the two trains meet?

(A) 200/3 m (B) 100 m
(C) 400/3 m (D) 500/3 m

Q.30 If a man cycles at 10 km/h, then he arrives at a certain place at 1:00 pm. If he cycles at 15 km/h, he arrives at the same place at 11:00 am. At what speed must he cycle to get there at noon?

(A) 11 km/h (B) 12 km/h
(C) 13 km/h (D) 14 km/h

Q.31 Tower *A* is 90 m tall and tower *B* is 140 m tall. They are 100 m apart. A horizontal skywalk connects the floors at 70 m in both the towers. If a taut rope connects the top of tower *A* to the bottom of tower *B*, at what distance (in meters) from tower *A* will the rope intersect the skywalk?

[GATE 2018 : IIT Guwahati (CE Set – 1)]

Q.32 In nuts & bolts factory, one machine produces only nuts at the rate of 100 nuts per minute & needs to be cleaned for 5 min after production of every 1000 nuts. Another machine produces only bolts at the rate of 75 bolts per minute & needs to be cleaned for 10 min after production of every 1500 bolts. If both the machines start production at the same time, what is the minimum duration required for producing 9000 pairs of nuts & bolts?

(A) 130 min (B) 135 min
(C) 170 min (D) 180 min

Q.33 At what time between 6 a.m. and 7 a.m. will the minute hand and hour hand of a clock make an angle closest to 60^0 ?

(A) 6: 22 a.m. (B) 6:27 a.m.
(C) 6: 38 a.m. (D) 6:45 a.m.

[GATE 2014 : IIT Kharagpur (EE Set –2, CSE Set – 2)]

Q.34 A chemical plant has four tanks (A, B, C & D), each containing 1000 L of a chemical. The chemical is being pumped from one tank to another as follows

From A to B @ 20 L/min
From C to A @ 90 L/min
From A to D @ 10 L/min
From C to D @ 50 L/min
From B to C @ 100 L/min
From D to B @ 110 L/min

Which tank gets emptied first & how long does it take (in minutes) to get empty after pumping starts?

(A) A, 16.66 (B) C, 20
(C) D, 20 (D) D, 25

Q.35 Shyam went from Delhi to Shimla via Chandigarh by car. The distance from Delhi to Chandigarh is ¾ times the distance from Chandigarh to Shimla. The average speed from Delhi to Chandigarh was half as much more as that from Chandigarh to Shimla .if the average speed for entire journey was 49 km/hr, then what was the average speed from Chandigarh to Shimla?

(A) 39.2 km/hr (B) 63 km/hr
(C) 42 km/hr (D) None of these.

Q.36 Trucks (10 m long) and cars (5 m long) go on a single lane bridge. There must be a gap of at least 20 m after each truck and a gap of at least 15 m after each car. Trucks and cars travel at a speed of 36 km/h. If cars and trucks go alternately, what is the maximum number of vehicles that can use the bridge in one hour?

(A) 1440 (B) 1200
(C) 720 (D) 600

[GATE 2017 : IIT Roorkee (EC, BT, PI Set – 1)]

Q.37 On a 20 km tunnel connecting two cities A & B, there are three gutters 1 & 2 is the half distance between gutters 2 & 3. The distance from city A to its nearest gutter, gutter 1 is equal to the distance of city B from gutter 3. On a particular day, the hospital in city A receives information that an accident has happened at the third gutter. The victim can be saved only if an operation is started within 40 min. an ambulance started from city A at 30 km/h & crossed the first gutter after 5 min. if the driver has doubled the speed after that, what is the maximum amount of time the doctor would get to attend the patient at the hospital. Assume 1 min is elapsed for taking the patient into & out of the ambulance.

(A) 4 min
(B) 2.5 min
(C) 1.5 min
(5) patient died before reaching the hospital

Q.38 Budhan covers a distance of 19 km in 2 hours by cycling one fourth of the time and walking the rest. The next day he cycles (at the same speed as before) for half the time and walks the rest (at the same speed as before) and covers 26 km in 2 hours. The speed in km/h at which Budhan walks is

(A) 1 (B) 4
(C) 5 (D) 6

[GATE 2017 : IIT Roorkee (IN, CE Set – 2)

Q.39 Two design consultants, P and Q , started working from 8 AM for a client. The client budgeted a total of USD 3000 for the consultants. P stopped working when hour hand moved by 210 degrees on the clock. Q stopped working when the hour hand moved by 240 degrees. P took tea breaks of 15 minutes each during her shift, but took no lunch break. Q took only one lunch break for 20 minutes, but no tea breaks. The market rate for consultants is USD 200 per hour and breaks are not paid. After paying the consultants, the client shall have USD _____ remaining in the budget.

(A) 000.00 (B) 300.00
(C) 166.67 (D) 433.33

[GATE 2019 : IIT Madras (EC)]

3.5 Agenda : Boats and Streams

Q.40 A boat covers a certain distance downstream in 1 hour, while it comes back in $1\frac{1}{2}$ hours. If the speed of the stream be 3 kmph, what is the speed of the boat in still water?

(A) 12 kmph (B) 13 kmph
(C) 15 kmph (D) None of these

Q.41 A motorboat, whose speed is 15 km/hr in still water goes 30 km downstream and comes back in a total of 4 hours 30 minutes. The speed of the stream (in km/hr) is:

(A) 4 (B) 5
(C) 6 (D) 10

Q.42 The speed of a boat in still water is 10 km/hr. If it can travel 26 km downstream and 14 km upstream in the same time, the speed of the stream is:

(A) 2 km/hr (B) 2.5 km/hr
(C) 3 km/hr (D) 4 km/hr

Q.43 A man rows to a place 48 km distant and back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 kmagainst the stream. The rate of the stream is:

(A) 1 km/hr (B) 1.5 km/hr
(C) 1.8 km/hr (D) 3.5 km/hr

Q.44 A man can row at 8 km per hour in still water. If it takes him thrice as long to row upstream, as to row downstream, then find the stream velocity in km per hour.

[GATE 2014 : IIT Kharagpur (EC Set – 3, ME Set – 3)]

3.6 Agenda : Linear Races

Q.45 Shubham & Anurag run a 100 m race, where Shubham beats Anurag by 10 m. To do a favour to Anurag ,Shubham starts 10 m behind the starting line in a second 100 m race. They both run at their earlier speeds. Which of the following g is true in connection with the second race?

(A) Shubham & Anurag reach the finishing line simultaneously.
(B) Anurag beats Shubham by 1 m
(C) Anurag beats Shubham by 11 m
(D) Shubham beats Anurag by 1 m

Q.46 Three runners A, B & C runs a race, with runner A finishing 12 m ahead of runner B & 18 m ahead of runner C, while runner B finishes 8 m ahead of runner C each runner travels the entire distance at a constant speed. What was the length of the race?

(A) 36 (B) 48 m

(C) 60 m (D) 72 m

3.8 Agenda : Challenge Questions

Q.47 There is a race between A and B after winning the race , A started to move backwards with the same speed and meets B at a distance of 420 m from the finish line and kept running. When B finished the race, A was at a distance of 924 m from the finish line. What is the ratio of their speeds ?

(A) 4:3 (B) 5:4

(C) 6:5 (D) 5:3

Q.48 Shyama&Vyom walk up an escalator (moving stairway). The escalator moves at a constant speed. Shyama takes three steps for every two of Vyom's steps. Shyama gets to the top of the escalator after having taken 25 steps, while Vyom (because his slower pace lets the escalator to do a little more of the work) takes only 20 steps to reach the top. If the escalator were turned off, how many steps would they have to take to walk up?

(A) 40 (B) 50

(C) 60 (D) 80

3.9 Agenda : Circular races and HCF LCM

Q.49 A printer starts running on a circular path of radius r meters. Her average speed (in m/min) is πr during the first 30 s, $\pi r/2$ during next one minute, $\pi r/4$ during the next 2 minutes, $\pi r/8$ during the next 4 minutes & so on. What is the ratio of the time taken for the nth round to that for the previous round?

(A) 4 (B) 8

(C) 16 (D) 32

Q.50 Find th HCF and LCM of the following :

(A) 2,4,8

(B) 24,60,120

(C) 2/3 , 4/5 , 7/9

(D) 99! , 999! , 9999!

Q.51 HCF of 3240 , 3600 and a third number is 36 and their LCM is $2^4 \times 3^5 \times 5^2 \times 7^2$ -

Q.52 Which among $2^{1/2}$, $3^{1/3}$, $4^{1/4}$, $6^{1/6}$ and $12^{1/12}$ is the largest ?

(A) $2^{1/2}$ (B) $3^{1/3}$

(C) $4^{1/4}$ (D) $6^{1/6}$

Q.53 The sum of the two numbers is 216 and their HCF is 27. The number are –

Q.54 The sum of the two numbers is 528 and their HCF is 33 . The number of pairs of n umbers satisfying the above conditions is –

Q.55 The number of number pairs lying between 40 and 100 with their HCF as 15 is –

Q.56 The products of two numbers is 2028 and their HCF is 13 . The number of such pairs are –

Q.57 The least number of five digits which is exactly divisible by 12 , 15 and 18 is :

Q.58 The LCM of two numbers is 48 . The numbers are in the ratio in the ratio 2 : 3.The sum of the numbers is –

Q.59 The product of two numbers is 1320 and their HCF is 6 . The LCM of the numbers is –

Q.60 Find the greatest number that will divide 43, 91 and 183 so as to leave the same remainder in each case.

Q.61 The smallest number which when diminished by 7 , is divided by 12 , 16 , 18 , 21 and 28 –

3.9 Agenda : Work and Time "Understanding Work"

Q.62 A can finish a piece of work by himself in 16 days. Calculate the amount of work done by him in 1 day and in 13 days.

Q.63 A can do a piece of work in 12 days while B alone can do it in 15 days. In how many days can A and B working together complete it ?

Q.64 It takes two hours for a person X to mow the lawn. Y can mow the same lawn in four hours. How long (in minutes) will it take X and Y, if they work together to mow the lawn?

(A) 60 (B) 80

(C) 90 (D) 120

[GATE 2019 : IIT Madras (EE)]

Q.65 Two design consultants, P and Q , started working from 8 AM for a client. The client budgeted a total of USD 3000 for the consultants. P stopped working when hour hand moved by 210 degrees on the clock.

Q stopped working when the hour hand moved by 240 degrees. P took tea breaks of 15 minutes each during her shift, but took no lunch break. Q took only one lunch break for 20 minutes, but no tea breaks. The market rate for consultants is USD 200 per hour and breaks are not paid. After paying the consultants, the client shall have USD ____ remaining in the budget.

(A) 000.00 (B) 300.00
(C) 166.67 (D) 433.33

[GATE 2019 : IIT Madras (EC)]

Q.66 A can do a piece of work in 12 days while B alone can do it in 15 days. In how many days the work gets completed if, A and B work together , but alternately :

(A) A Starts (B) B Starts

Q.67 A man can finish a work in 6 days, a woman in 10 days and a child in 12 days. The man starts the work and works for 1/3rd of a day, then the woman works for 1/3rd of a day and finally the boy works for remaining 1/3rd of a day. This cycle is repeated till the work finishing. Who was working when the work finished?

(A) Man (B) Woman
(C) Child (D) None of these

Q.68 A can do a piece of work in 25 days and B can do it in 20 days. They work together for 5 days and then A goes away. How many more days will B require to finish the work ?

Q.69 A can do a piece of work in 10 days , B in 12 days and C in 15 days . They all start the work together , but A leaves the work after 2 days and B leaves 3 days before the work is completed. How many days did the work last?

Q.70 A can do a piece of work in 10 days , B in 10 days and C in 15 days . They all start the work together , but A leaves the work after 2 days and B leaves 3 days before the work is completed. How many days did the work last?

3.10 Agenda : Distribution of wages

Q.71 Two persons A and B can complete a work in 10 and 15 days respectively, working separately. In how many days will the work be completed, if they both work together. If they received Rs. 300 as payment, then what are their respective shares ?

Q.72 A can do a piece of work in 15 days and B in 20 days. They finished the work with the assistance of C in 5 days and got Rs. 45 as their wages. The share of each in wages (in Rs.) is

(A) 22.5, 12, 10.5 (B) 10.5, 12, 22.5
(C) 15, 11.25, 18.75 (D) 12.5, 13 19.5

3.11 Agenda : Pipes and Cistern

Q.73 pipes can fill a reservoir in 15, 20, 30 and 60 hours respectively. The first was opened at 6 am, second at 7 am third at 8 am and fourth at 9 am. When will the reservoir be full?

(A) 12.30 pm (B) 1.30 pm
(C) 1.00 pm (D) 12.50 pm

Q.74 A and B can fill a cistern in 4 and 5 hours respectively and C can empty it in 2 hours. If three pipes be opened at 1, 2 and 3 am, when will the cistern be empty?

(A) 5 am (B) 2 pm
(C) 5 pm (D) 4 pm

Q.75 A cistern has 3 pipes, A to supply and B and C to drain. A can fill it in 10 hours while B and C can empty it in 15 and 20 hours respectively. If the cistern is 7/10 full when they are all opened at once, in what time will it be empty?

(A) 36 hours (B) 42 hours
(C) 48 hours (D) 52 hours

Q.76 Two pipes P and Q can fill the tank in 6 hours and 9 hours while 3rd pipe R can empty the tank in 12 hours. Initially P and R open for 4 hours then P is closed and Q is open. After 6 hours R is closed then find the total time to fill the tank (in hours).

[GATE 2019 : IIT Madras (ME)]

Q.77 It takes 30 minutes to empty a half-full tank by draining it at a constant rate. It is decided to simultaneously pump water into the half-full tank while draining it. What is the rate at which water has to be pumped in so that it gets fully filled in 10 minutes?

(A) 4 times the draining rate
(B) 3 times the draining rate
(C) 2.5 times the draining rate
(D) 2 times the draining rate

[GATE 2014 : IIT Kharagpur (EC Set – 2, ME Set – 2)]

Q.78 Two machines M1 and M2 are able to execute any of four jobs P, Q, R and S. The machines can perform one job on one object at a time. Jobs P, Q, R and S take 30 minutes, 20 minutes, 60 minutes and 15 minutes each respectively.

There are 10 objects each requiring exactly 1 job, Job P is to be performed on 2 objects, Job Q on 3 objects, Job R on 1 object and Job S on 4 objects. What is the minimum time needed to complete all the jobs?

(A) 2 hours (B) 2.5 hours
(C) 3 hours (D) 3.5 hours

[GATE 2017 : IIT Roorkee (CE, CH Set – 1)]

3.12 Agenda : W = DMTE

Q.79 A certain number of men can finish a piece of work in 60 days. If they were 8 men more , the work colud be finished in 10 days less. Find the original number of men.

Q.80 12 men can build a wall 100 metres long , 3 metres high and 0.5 metre thick in 25 days. In how many days will 20 men build a wall 60 metres long , 4 metres high and 0.25 metre thick ?

Q.81 3 men or 5 women can do a job in 12 days. How long will 6 men and 5 women take to finih the job ?

Q.82 If 12 pumps can raise 1218 tons of water in 11 days of 9 hours each, then how many pumps will raise 2030 tons of water in 12 days of 11 hours each?

(A) 12 pumps (B) 15 pumps
(C) 18 pumps (D) 14 pumps

Q.83 Seven machines take 7 minutes to make 7 identical toys. At the same time rate how many minutes would it take for 100 machines to make 100 toys?

(A) 1 (B) 7
(C) 100 (D) 700

[GATE 2018 : IIT Guwahati (ME Set – 1)]

Q.84 Ananth takes 6 hours and Bharath takes 4 hours to read a book. Both started reading copies of the book at the same time. After how many hours is the number of pages to be rad by Ananth, twice that to be read by Bharath? Assume Ananth and Bharath read all the pages with constant pace.

(A) 1 (B) 2
(C) 3 (D) 42

[GATE 2016 : IISC Banglore (CE Set - 2)

Q.85 1200 men and 500 women can build a bridge in 2 weeks. 900 men and 250 women will take 3 weeks to build the same bridge. How many men will be needed to build the bridge in one week

(A) 3000 (B) 3300
(C) 3600 (D) 3900

[GATE 2017 : IIT Roorkee (EC Set – 2)]

Q.86 **P, Q, R** and **S** are working on a project. **Q** can finish the task in 25 days, working alone for 12 hours a day. **R** can finish the task in 50 days, working alone for 12 hours per day. **Q** worked 12 hours a day but took sick leave in the beginning for two days. **R** worked 18 hours a day on all days. What is the ratio of work done by **Q** and **R** after 7 days from the start of the project?

(A) 10 : 11 (B) 11 : 10
(C) 20 : 21 (D) 21 : 20

[GATE 2016 : IISC Banglore (EC Set – 1, ME Set-1)]

Q.87 5 skilled workers on build a wall in 20 days; 8 semi-skilled workers can build a wall in 25 days; 10 unskilled workers can build a wall in 30 days. If a team has 2 skilled. 6 semi-skilled and 5 unskilled workers, how long will it take to build the wall?

(A) 20 days (B) 18 days
(C) 16 days (D) 15 days

[GATE 2010 : IIT Guwahati (EC, EE CE, ME, CSE, IN)]

Q.88 ***S***, ***M***, ***E*** and ***F*** are working in shifts in a team to finish a project. ***M*** works with twice the efficiency of others but for half as many days as ***E*** worked. ***S*** and ***M*** have 6 hour shifts in a day, whereas ***E*** and ***F*** have 12 hours shifts. What is the ratio of contribution of ***M*** to contribution of ***E*** in the project?

(A) 1 : 1 (B) 1 : 2
(C) 1 : 4 (D) 2 : 1

[GATE 2016 : IISC Banglore (EC Set – 2, ME Set-3)]

Q.89 Six technicians working at the same rate complete the work of one server in 10 hrs. If they start at 11:00 a.m. and one additional technician per hour is being added beginning at 5:00 p.m., at what time the work on server will be complete?

(A) 6 : 40 p.m. (B) 7 : 00 p.m.
(C) 7 : 40 p.m. (D) 8 :00 p.m.

Q.90 After Tsunami disaster, 90 men were required to remove the remains in 20 days but 10 men left the work after every 5th day. In how many days will the remains be cleared?

(A) 25 days (B) 26 ¼ days
(C) 30 days (D) 27½ days

❖❖❖❖

A Answer Keys

TSD, Work & Time					
1.	12.5 km/ph	2.	36 km/ph	3.	192 km/ph
4.	C	5.	C	6.	42 km/ph
7.	D	8.	10 kM	9.	40 min
10.	60 min	11.	12 km	12.	12 km
13.	B	14.	16 km	15.	B
16.	14 sec.	17.	A	18.	560
19.	D	20.	10 am	21.	720 km
22.	C	23.	B	24.	800
25.	D	26.	B	27.	C
28.	C	29.	C	30.	B
31.	22.22	32.	C	33.	A
34.	C	35.	C	36.	A
37.	B	38.	D	39.	C
40.	D	41.	B	42.	C
43.	A	44.	4	45.	D
46.	B	47.	C	48.	B
49.	C	50.	(A) HCF – 2, LCM – 8 (B) HCF – 12, LCM – 120 (C) HCF – 1/45, LCM – 28 (D) HCF – 99!, LCM – 9999!	51.	$2^2 \times 3^5 \times 7^2$
52.	B	53.	(3,5) (1,7)	54.	4 Pairs
55	4 no Pairs	56.	2 Pairs	57	10080
58.	40	59.	220	60.	4
61.	1015	62.	1/16, 13/16	63.	20/3 Days
64.	80	65.	C	66.	(A) 53/4 days (B) 675 days
67.	B	68.	11 days	69.	5 Days
70.	5 Days	71.	Rs180, Rs120	72.	C
73.	C	74.	C	75.	B
76.	14.5 HRS.	77.	A	78.	A
79.	40 Men	80.	6 Days	81.	4 Days
82.	B	83.	B	84.	C
85.	C	86.	C	87.	D
88.	C	89.	D	90.	B

❖❖❖❖

4 PERCENTAGE & ITS APPLICATIONS

4.1 Agenda : DI (Pie Chart & Table Graph)

Q.1 40% of deaths on city roads may be attributed to drunken driving. The number of degrees needed to represent this as a slice of a pie chart is

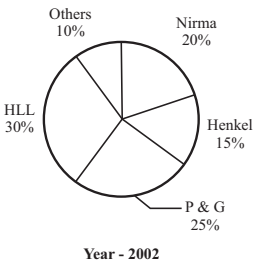
(A) 120 (B) 144

(C) 160 (D) 212

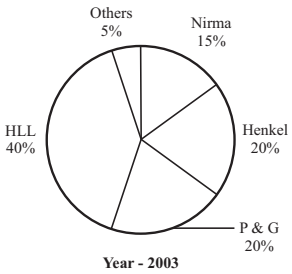
[GATE 2017 : IIT Roorkee (EC, BT, PI Set – 1)]

Direction (2-11 :) Study the pie charts given below and answer the following questions.

The percentage market share (on value basis) of the companies in the detergent market for 2002 and 2003 is given below.



Year - 2002



Year - 2003

The total size of the market has increased from Rs. 150 crore in 2002 to Rs. 375 crore in 2003.

Q.2 What is the percentage increase in sales of the overall detergent market in 2003 over 2002?

(A) 100% (B) 150 %

(C) 200% (D) 250%

Q.3 Which of the following recorded the minimum growth in sales in the year 2003 over the year 2002?

(A) P & G (B) HLL

(C) Henke (D) Others

Q.4 What is the growth rate of HLL detergents in 2003?

(A) 133% (B) 233%

(C) 333% (D) 433%

Q.5 What is the ratio of sales of P & G in the year 2003 to its sales in year 2002?

(A) 5 : 2 (B) 3 : 2

(C) 1 : 2 (D) 2 : 1

Q.6 If the sales value of all the companies in 2002 would have been higher by10%, then the detergent market would have been larger by how much value?

(A) 15 crore (B) 25 crore

(C) 30 croreq (D) 10 crore

Q.7 In 2004, if each company increases its sales value by 10%, then what is the percentage growth of the detergent market?

(A) 10% (B) 20%

(C) 30% (D) 8%

Q.8 If the detergent industry grows at 10% per annum for the next two years starting from year 2003 then what would be the value of the detergent market be in 2005?

(A) 453.75 crore (B) 450.25 crore

(C) 451.50 crore (D) 452.25 crore

Q.9 If, in the year 2001 the expenditure of HLL is 30 crore and if it increases by 10% every year then what are the values for the following in the year 2002 for HLL?

Profit = ……..; Profit% = ……; Margin = ……..

(A) Profit = Rs. 15 crore; Profit% = 36.4%; Margin = 25.9%

(B) Profit = Rs. 18 crore; Profit% = 28.5%; Margin = 23.8%

(C) Profit = Rs. 12 crore; Profit% = 35.6%; Margin = 25.6%

(D) Profit = Rs. 12 crore; Profit% = 36.4%; Margin = 26.67%

Q.10 What is the difference in the growth rates of Henkel and P & G in 2003 over 2002?

(A) 133.33% (B) 33.33%

(C) 233.33% (D) 3.3%

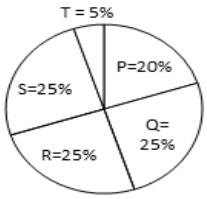
Q.11 If the total sales of detergent market is doubled in 2002 and in 2003 then what will be the ratio of sales of Nirma for 2003 to 2002?

(A) 7 : 8 (B) 16 : 5

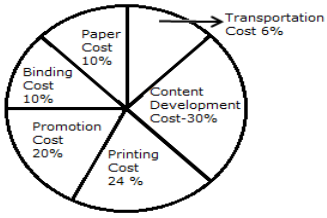
(C) 15 : 8 (D) 12 : 7

Q.12 In a company P, Q, R, S, T categories of employees' work. In 2010, total number of employees were 600. From 2010 to 2016 total number of employees increased by 15% . In S category number of employees were increased by 40% however, there is no change in number of employees in P, Q and R categories. Calculate number of T category employees in 2016?

[GATE 2019 : IIT Madras]



Direction (13-14) : The Pie chart below which gives the expenditure incurred in printing G.S. books.



Q.13 If the binder's charges amount to 6000, then the expenses on the cost of promotion would have been what percentage of the profit if the revenue was 300% higher than the content development cost.

(A) 25 (B) 100

(C) 50 (D) 200

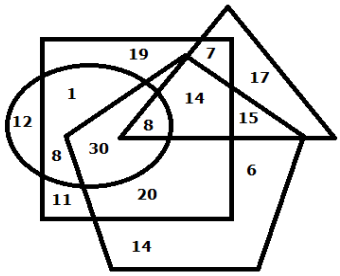
Q.14 What is the angle for the sector representing paper cost?

(A) 26^0 (B) 36^0

(C) 45^0 (D) $24^{1/2\,0}$

Direction (15-16): In the diagram given below the triangle represents people who like Dell's laptops, the square represents people who like Sony's laptops while the pentagon represents people who like HP's laptops, the circle represents people who like SAMSUNG's laptops.

Answer the questions based on the following diagram the figures written in the diagram show the number of persons belonging to that category.



Q.15 How many people like both SAMSUNG and SONY's laptops but not DELL or HP laptops?

(A) 9 (B) 52

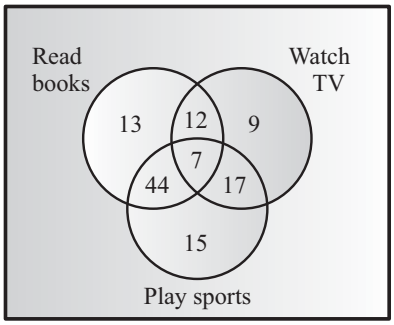
(C) 21 (D) 39

Q.16 How many people like all the laptops?

(A) 38 (B) 8

(C) 1 (D) 53

Q.17 The Venn diagram shows the preference of the student population for leisure activities.



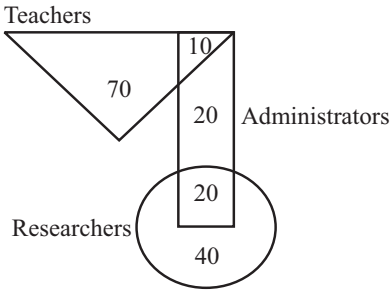
From the data given, the number of students who like to read books or play sports is ____.

(A) 44 (B) 51

(C) 79 (D) 108

[GATE 2016 : IISc Bangalore (EC Set - 2, ME Set- 3)]

Q.18 Triangle is teacher, Rectangle is Administrator and Circle is researcher . Then the percentage of administrator is in range of



(A) 0-15 (B) 16-30

(C) 31-46 (D) 47-60

[GATE 2019 : IIT Madras]

DIRECTIONS for Questions :Answer the questions on the basis of the information given below:

Figures in Rs.	A	B	C	D	Total
Sales	24568	25468	23752	15782	89570
Operating costs	17198	19101	16151	10258	62708
Interest costs	2457	2292	2850	1578	9177
Profit	4914	4075	4750	3946	17684

Q.19 Which firm has the highest profitability?

(A) A (B) B

(C) C (D) D

Q.20 If Firm A acquires Firm B, approximately what percentage of the total market (total sales) will they corner together?

(A) 55 % (B) 45 %

(C) 35 % (D) 50 %

Q.21 Mola taxi offers 3 rides pool, mini, prime. Table given for number of rides for past 4 months mola platform earns 1 $ per ride. %share of revenue contributed by prime to total revenue of mola for entire duration is

[GATE 2019 : IIT Madras]

Type	Months			
	Jan	Feb	Mar	Apr
Pool	**170**	**320**	**215**	**190**
Mini	**110**	**220**	**180**	**70**
Prime	**75**	**180**	**120**	**90**

(A) 16.24 (B) 23.97

(C) 38.74 (D) 25.86

Q.22 The data given in the following table summarizes the monthly budget of an average household

Category	Amount (Rs.)
Food	4000
Clothing	1200
Rent	2000
Savings	1500
Other expenses	1800

The approximate percentage of the monthly budget NOT spent on savings is

(A) 10% (B) 14%

(C) 81% (D) 86%

[GATE 2012 : IIT Delhi (EC, EE)]

Q.23 Following table provides figures (in rupees) on annual expenditure of a firm for two years – 2010 and 2011.

Category	2010	2011
Raw material	5200	6240
Power & fuel	7000	9450
Salary & wages	9000	12600
Plant & machinery	20000	25000
Advertising	50000	19500
Research & development	22000	26400

In 2011, which of the following two categories have registered increase by same percentage?

(A) Raw material and Salary & wages

(B) Salary & wages and Advertising

(C) Power & fuel and Advertising

(D) Raw material and Research & Development

[GATE 2013 : IIT Bombay (CE)]

Q.24 A shaving set company sells 4 different types of razors, Elegance, Smooth, Soft and Executive. Elegance sells at Rs. 48, Smooth at Rs. 63, Soft at Rs. 78 and Executive at Rs. 173 per piece. The table below shows the numbers of each razor sold in each quarter of a year.

Quarter/ Product	Elegance	Smooth	Soft	Executive
Q1	27300	20009	17602	9999
Q2	25222	19392	18445	8942
Q3	28976	22429	19544	10234
Q4	21012	18229	16595	10109

Which product contributes the greatest fraction to the revenue of the company in that year?

(A) Elegance (B) Executive

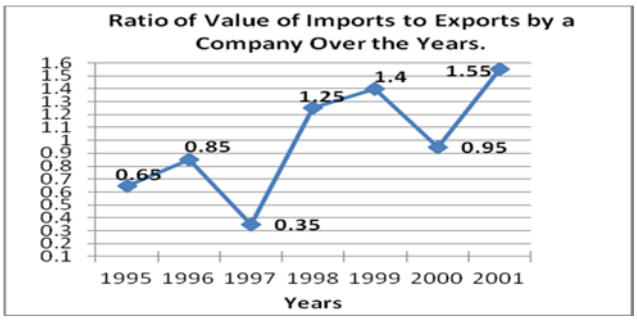
(C) Smooth (D) Soft

[GATE 2016 : IISc Bangalore

(CE Set – 1, CSE Set - 1)]

4.2 Agenda : DI (Line Graph)

Direction (25-26) : The following graph gives the ratios of amounts of imports to that of exports for the period from 1995-2001.



Q.25 If the imports in 1998 was Rs. 250 crores and the total exports in the years 1998 and 1999 together was Rs. 500crores, then the imports in 1999 was ?

(A) Rs 250 crores (B) Rs 300 crores

(C) Rs 357 crores (D) Rs 420 crores

Q.26 If the total value of exports for years 1999 and 2000 were same, then the percentage change in the value of imports in 2000 over 1999 is (approx)

(A) 32%

(B) 47%

(C) 29%

(D) cannot be determined

4.3 Agenda : Percentage Concept Builder

Q.27 A's income is 70% of B's. B's income is 50%of C's. If C's income is Rs. 1,00,000, what is A's income?

Q.28 In a basket of fruits, 60% are mangoes and remaining 40% are apples. 25% of the apples are green and the rest 75% are red. Of the mangoes, 80% are red and the rest of the mangoes are green. What percentage of the green fruits are mangoes?

Q.29 In a huge pile of apples and oranges, both ripe and unripe mixed together, 15% are unripe fruits. Of the unripe fruits, 45% are apples. Of the ripe ones, 66% are oranges. If the pile contains a total of 5692000 fruits, how many of them are apples?

(A) 2029198 (B) 2467482

(C) 2789080 (D) 3577422

[GATE 2016 : IISc Bangalore (EC Set – 1, ME Set -1)]

Q.30 In an exam, a student scored 50% of the maximum marks and yet failed by 12 marks. If he had scored 10% more than what he scored, he would have just managed to get the pass percentage. What are the maximum marks of the paper?

Q.31 If the milk to water ratio in a mixture is 2 : 3, what is the milk percentage in the mixture?

Q.32 If three – fourth of students in the class have cars and half of the car owners one a Mercedes, what fraction of the class has a Mercedes? Express the answer in percentage term.

Q.33 Mira's expenditure and savings are in the ratio 3 : 2. Her income increases by 10%. Her expenditure increases by 12%. By what percentage does her savings increase?

Q.34 What is 20% of 30% of 40%?

Q.35 $(x\%$ of $y) + (y\%$ of $x)$ is equivalent to _____

(A) 2% of xy (B) 2% of $\left(\frac{xy}{100}\right)$

(C) xy % of 100 (D) 100% of xy

[GATE 2016 : IISc Bangalore (CE Set - 2]

Q.36 There are two candidates P and Q in an election. During the campaign, 40% of the voters promised to vote for P, and rest for Q. However, on the day of election 15% of the voters went back on their promise to vote for P and instead voted for Q. 25% of the voters went back on their promise to vote for Q and instead voted for P. Suppose, P lost by 2 votes, then what was the total number of voters?

(A) 100 (B) 110

(C) 90 (D) 95

[GATE 2011 : IIT Madras (EC, EE)]

Q.37 Three friends, R, S and T shared toffee from a bowl. R took 1/3rd of the toffees, but returned four to the bowl. S took 1/4th of what was left but returned three toffees to the bowl. T took half of the remainder but returned two back into the bowl. If the bowl had 17 toffees left, how many toffees-were originally there in the bowl?

(A) 38 (B) 31

(C) 48 (D) 41

[GATE 2011 : IIT Madras (EC, EE)]

Q.38 The cost function for a product in a firm is given by $5q^2$, where q is the amount of production. The firm can sell the product at a market price of Rs.50 per unit. The number of units to be produced by the firm such that the profit is maximized is

(A) 5 (B) 10

(C) 15 0x (D) 25

[GATE 2012 : IIT Delhi (ME, CE, CSE)]

Q.39 In the summer of 2012, in New Delhi, the mean temperature of Monday to Wednesday was 41ºC and of Tuesday to Thursday was 43^0C. If the temperature on Thursday was 15% higher than that of Monday, then the temperature in ^{0}C on Thursday was

(A) 40 (B) 43

(C) 46 (D) 49

[GATE 2013 : IIT Bombay (EC, EE, IN)]

Q.40 A firm is selling it product at Rs. 60 per unit. The total cost of production is Rs. 100 and firm is earning total profit of Rs. 500. Later, the total cost increased by 30%. By what percentage the price should be increased to maintain the same profit level

(A) 5 (B) 15

(C) 10 (D) 30

[GATE 2013 : IIT Bombay (CE)]

4.4 Agenda : x X y = Constant

Q.41 If A is 37.5% more than B, by what percent is B less than A?

Q.42 If prices decrease by 25%, by what percentage can consumption increase without affecting the expenditure?

Q.43 If speed increases by 33.33%, what is the percent reduction in time taken to travel the same distance?

Q.44 Since prices of mangoes decreased by 25%, I can purchase 4 mangoes more for Rs. 60. What is the original price of one mango?

Q.45 If the area of the circle is increased by 21% then what is the percentage increased in the circumference of the circle?

Q.46 In the summer, water consumption is known to decrease overall by 25%. A Water Board official states that in the summer household consumption decreases by 20%, while other consumption increases by 70%. Which of the following statements is correct?

(A) The ratio of household to other consumption is 8/17

(B) The ratio of household to other consumption is 1/17

(C) The ratio of household to other consumption is 17/8

(D) There are errors in the official's statement.

[GATE 2017 : IIT Roorkee EC, BT, PI Set - 1]

4.5 Agenda : Successive Percentage Change

Q.47 If the price of petrol increases successively by 20% and then by 10%, what is the net change in percentage terms?

Q.48 The length and the breadth of a rectangle are 10 cm and5 cm respectively. The length is increased by 10% and the breadth is increased by 5%. What is the new area of the rectangle?

Q.49 The radius of a circle has increased by 20%. By what percentage does

A. The circumference increase?

B. The area increase?

Q.50 The length of a rectangle is increased by 10%. What will be the percentage decreased in its breadth so as to have the same area?

Q.51 If the side of a square is increased by 25%, then its area is increased by how many percent?

4.6 Agenda : Profit Loss and Mixture Alligation

Q.52 A bought a cycle for Rs. 1080 and then sold it to B for a loss of 20%. B spent Rs. 36 on improving the condition of the cycle and then sold it to C for a 20% profit. What amount did C pay for the cycle?

Q.53 Anirudh bought 8 lemons for a rupee, but sells only 6 lemons for a rupee. Find his profit percentage.

Q.54 Aditya purchases toffees at Rs. 10 per dozen and sells them at Rs. 12 for every 10 toffees. Find the gain or loss percentage.

Q.55 A boy buys eggs at 10 for Rs. 1.80 and sells them at 11 for Rs. 2 What is his profit or loss percent?

Q.56 A single discount equivalent to a series discount of 20%, 10% and 5% is ….. .

Q.57 Paresh sells 40 pencils and gains the selling price of 10 pencils. What is his profit percentage?

Q.58 Inspite of giving a discount of 10%, a shopkeeper manages to make a profit of 8%. By what percentage does the shopkeeper mark – up his goods?

Q.59 A man sells an article at a profit of 25%. If he had bought it at 20% less and sold it for Rs. 10.50 less, he would have gained 30%. Find the C.P. of the article.

Q.60 If a commission of 10% is given on the marked price of an article, the gain is 25%. Find the gain percentage, if the commission is increased to 20%.

Q.61 A fruit seller sold a basket of fruits at 12.5% loss. Had he sold it for Rs.108 more, he would have made a 10% gain. What is the loss in Rupees incurred by the fruit seller?

(A) 48 (B) 52

(C) 60 (D) 108

[GATE 2018 : IIT Guwahati (CE Set – 1)]

Q.62 In what ratio must rice at Rs. 9.30 per kg be mixed with rice at Rs. 10.80 per kg so that the mixture be worth Rs. 10 per kg?

Q.63 In what ratio must tea at Rs. 62 per kg be mixed with tea at Rs. 72 per kg so that the mixture must be worth Rs. 64.50 per kg?

(A) 3 : 1 (B) 3 : 2

(C) 4 : 3 (D) 5 : 3

Q.64 The cost of Type 1 rice is Rs. 15 per kg and Type 2 rice is Rs. 20 per kg. if both Type 1 and Type 2 mixed in the ratio of 2 : 3, then the prices per kg of the mixed variety of rice is:

(A) Rs. 18 (B) Rs. 18.50

(C) Rs. 19 (D) Rs. 19.50

Q.65 A merchant has 1000 kg of sugar, part of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the whole. The quantity sold at 18% profit is:

(A) 400 kg (B) 560 kg

(C) 600 kg (D) 640 kg

Q.66 In what ratio must water ne mixed with milk costing Rs. 12 per litre to obtain a mixture worth of Rs. 8 per litre?

(A) 1 : 2 (B) 2 : 1

(C) 2 : 3 (D) 3 : 2

Q.67 Tea worth Rs. 126 per kg and Rs. 135 per kg are mixed with a third variety in the ratio 1 : 1 : 2. If the mixture is worth Rs. 153 per kg, the price of the third variety per kg will be:

(A) Rs. 169.50 (B) Rs. 170

(C) Rs. 175.50 (D) Rs. 180

Q.68 The price of a wire made of a super alloy material is proportional to the square of its length. The price of 10 m length of wire is Rs. 1600. What would be the total price (in Rs.) of two wires of lengths 4 m and 6 m?

(A) 768 (B) 832

(C) 1440 (D) 1600

[GATE 2018 : IIT Guwahati (CE Set – 1)]

Q.69 Two alloys *A* and *B* contain gold and copper in the ratios of 2:3 and 3:7 by mass, respectively. Equal masses of alloys *A* and *B* are melted to make an alloy *C*. The ratio of gold to copper in alloy *C* is,

(A) 5 : 10 (B) 7 : 13

(C) 6 : 11 (D) 9 : 13

[GATE 2018 : IIT Guwahati (EC Set – 1)]

Q.70 In what ratio must water be mixed with milk to gain 20% by selling the mixture at cost price?

Q.71 The milk and water in two vessels A and B are in the ratio 4 : 3 and 2 : 3 respectively. In what ratio, the liquids in both the vessels be mixed to obtain a new mixture in vessel C containing half milk and half water?

Q.72 Two vessels A and B contain milk and water mixed in the ratio 8 : 5 and 5 : 2 respectively. Find the ratio in which these mixture be mixed to get a new mixture containing $69\frac{3}{13}$ % milk, is:

(A) 2 : 7 (B) 3 : 5

(C) 5 : 2 (D) 5 : 7

Q.73 A container originally contains 10 litres of pure spirit. From this container 1 litre of spirit is replaced with 1 litre of water. Subsequently, 1 litre of the mixture is again replaced with 1 litre of water and this process is repeated one more time. How much spirit is now left in the container?

(A) 7.58 litres (B) 7.84 litres

(C) 7 litres (D) 7.29 litres

[GATE 2011 : IIT Madras (ME, CE, CSE)]

Q.74 A container contains 40 litres of milk From this containers 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?

(A) 26.34 litres (B) 27.36 litres
(C) 28 litres (D) 29.16 litres

[GATE 2012 : IIT Delhi]

Q.75 8 litres are drawn from a cask full of wine and is then filled with water. This operation is performed three more times. The ratio of the quantity of wine now left in cask to that of the water is 16 : 65. How much wine did the cask hold originally?

(A) 18 litres (B) 24 litres
(C) 32 litres (D) 42 litres

Q.76 The ratio of the number of boys and girls who participated in an examination is 4:3. The total percentage of candidates who passed the examination is 80 and the percentage of girls who passed is 90. The percentage of boys who passed is _____. **[GATE 2019 : IIT Madras]**

(A) 90.00 (B) 80.50
(C) 55.50 (D) 72.50

4.7 Agenda : Challenge Questions

Q.77 Using only 2, 5, 10, 25 and 50 paise coins, what will be the minimum number of coins required to pay exactly 78 paise, 69 paise and Re 1.01 to three different persons?

(A) 19 (B) 20
(C) 17 (D) 18

Q.78 A report consists of 20 sheets each of 55 lines and each such line consists of 65 characters. This report is reduced onto sheets each of 65 lines such that each line consists of 70 characters. The percentage reduction in number of sheets is closest to

(A) 20% (B) 5%
(C) 30% (D) 35%

Q.79 Mayank, Mirza, Little and Jaspal bought a motorbike for $60,000. Mayank paid one half of the sum of the amounts paid by the other, Mirza paid one third of the sum of the amounts paid by the other boys; and Little paid on fourth of the sum of the amounts paid by the other boys. How much did Jaspal has to pay?

(A) $15,000 (B) $13,000
(C) $17,000 (D) None of these

Q.80 The price of a Maruti car rises by 30% while the sale of the car comes down by 20%. What is the percentage change in the total revenue?

(A) - 4% (B) - 2%
(C) + 4% (D) + 2%

Q.81 If the radius of a right circular cone is increased by 50%, its volume increases by

(A) 75% (B) 100%
(C) 125% (D) 237.5%

[GATE 2017 : IIT Roorkee (EC, BT, PI Set – 1)]

Q.82 Fiscal deficit was 4% of GDP in 2015 and increased to 5% in 2016. If GDP increased by 10% from 2015 to 2016. Then % increase in actual Fiscal deficit?

[GATE 2019: IIT Madras]

4.8 Agenda : SICI and Some More Graphs

Q.83 If R = 10%, n = 4 years, what is the simple interest charged on a loan of Rs. 2,000?

Q.84 In the above problem, if the case was one of compound interest, what is the CI?

Q.85 The company policy states that for a short – term loan on simple interest for 2 years, the rate of interest is 20%. A new recruit did not know it and he negotiated with a very tough customer for a 18% loan. What is the percentage of reduction in the earnings?

Q.86 If Mr Kuber had lent $10 million at an interest rate of 40% p.a. to a less preferred customer Mr Narada, after how many years would the principal double itself if compounded half – yearly?

Q.87 A certain strain of epidemic bacteria made its appearance in Swarg Lok sending all the medical into frenzy. It reproduces itself at the rate of 10% every 5 min. In how much time will be number double itself?

Q.88 What is the net present value of a piece of property which would be valued at Rs. 2 lakh at the end of 2 years? [Annual rate of increase = 5%].

Q.89 After Mr Kuber introduced the new norms for lending, the turnover of Kuber and Daughters went up from $100 million to $300 million in just 3 years. What is the compound growth rate of the company?

Q.90 If an amount is kept at SI, it earns an interest of Rs. 600 in first two years but when kept at CI, it earns an interest of Rs. 660 in the same period. Find the rate of interest and the Principal.

Q.91 What shall be the simple interest to be paid on a principal of Rs. 14,000 borrowed at a rate of 15% for a period of 3 years and 6 months?

Q.92 At what simple rate of interest shall a sum of money double itself in 4 years?

Q.93 If a certain sum amounts to Rs. 108 in 2 years Rs. 112 in 3 years, find the principal and rate ofinterest (simple).

Q.94 For how many years should Rs. 600 be invested at 10% p.a. in S.I., in order to earn the same interest as earned by investing Rs. 800 at 12% p.a. for 5 years in S.I.?

Q.95 Prabhat took a certain amount as a loan from a bank at the rate of 8% p.a. S.I. and gave the same amount to Ashish as a loan at the rate of 12% p.a. If at the end of 12 years, he made a profit 12% p.a. If at the end of 12 years, he made a profit of Rs. 320 in the deal, what was the original amount?

Q.96 If a sum of money at simple interest doubles in 6 years, it will become 4 times in

Q.97 The rate of interest on a sum of money is 4% p.a. for the first 2 years, 6% p.a. for the next 3 years ad 8% p.a. for the period. beyond 5 years. If the simple interest accrued by the sum for a total period of 8 years is Rs. 1,280 then what is the sum?

Q.98 Vinod Kumar invested Rs. 1,600 for3 years and Rs. 1,100 for 4 years at the same rate of simple interest. If the total interest from these investments is Rs. 506, find the rate of interest.

Q.99 A man invests an amout of Rs. 15,860 in the names of his three sons A, B, and C in such a way that they getthe same interest after 2, 3 and 4 years respectively at SI. If the rate of interest is 5%, then the ratio of amounts invested in the name of A, B and C is

Q.100 Mr Kuber bought a flat in Swarg Lok Apartments for $1,000. What would the future value of the flat be after 2 years if the value is compounded semi – annually at 22% per annum?

Q.101 What shall be the amount for a sum of Rs. 1,000 at 10% for 3 years compounded annually?

Q.102 Find the C.I on Rs. 5,000 at 8% p.a. for 2 years, compounding being done annually.

Q.103 Find amount for Rs. 80,000 at 20% per annum, compounded semi – annually for 2 years.

Q.104 Find C.I. on Rs. 10,000 at 10% for 9 months compounded quarterly

Q.105 Industrial consumption of power doubled from 2000-2001 to 2010-2011. Find the annual rate of increase in percent assuming it to be uniform over the years.

(A) 5.6 (B) 7.2
(C) 10.0 (D) 12.2

[GATE 2014 : IIT Kharagpur (EC Set – 4, ME Set - 4)]

Q.106 The population of a new city is 5 million and is growing at 20% annually. How many years would it take to double at this growth rate?

(A) 3-4 years (B) 4-5 years
(C) 5-6 years (D) 6-7 years

[GATE 2014 : IIT Kharagpur (CE Set - 2 IN)]

Q.107 Round–trip tickets to a tourist destination are eligible for a discount of 10% on the total fare.

In addition, groups of 4 or more get a discount of 5% on the total fare. If the one way single person fare is Rs 100, a group of 5 tourists purchasing round–trip tickets will be charged Rs_____

[GATE 2014 : IIT Kharagpur (EE Set – 1, CSE Set - 1)]

Q.108 The Gross Domestic Product (GDP) in Rupees grew at 7% during 2012-2013. For international comparison, the GDP is compared in US Dollars (USD) after conversion based on the market exchange rate. During the period 2012-2013 the exchange rate for the USD increased from Rs. 50 per USD to Rs. 60 per USD. India's GDP in USD during the period 2012- 2013

(A) Increased by 5 % (B) Decreased by 13%
(C) Decreased by 20% (D) Decreased by 11%

[GATE 2014 : IIT Kharagpur (EE Set - 3, CSE Set - 3)]

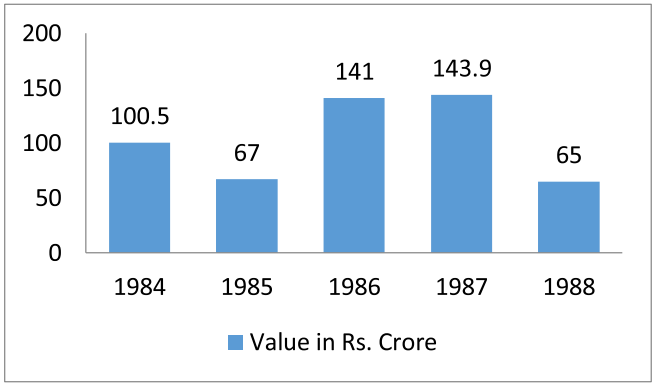
Q.109 Leila aspires to buy a car worth Rs. 10,00,000 after 5 years. What is the minimum amount in Rupees that she should deposit now in a bank which offers 10% annual rate of interest, if the interest was compounded annually?

(A) 5,00,000 (B) 6,21,000
(C) 6,66,667 (D) 7,50,000

[GATE 2018 : IIT Guwahati (EC Set – 1)]

Questions 109-110 : Refer to the following Bar-chart and answer the questions that follow:

Project Exports : Contracts Secured



Q.110 What is the average value of the contract secured during the years shown in the diagram?

(A) Rs. 103.48 crore (B) Rs. 105 crore

(C) Rs. 100 crore (D) Rs.125.2 crore

Q.111 Compared to the performance in 1985 (i.e. taking it as the base), what can you say about the performances in the years '84, '85, '86, '87, '88 respectively, in percentage terms?

(A) 150, 100, 211, 216, 97

(B) 100, 67, 141, 144, 65

(C) 150, 100, 200, 215, 100

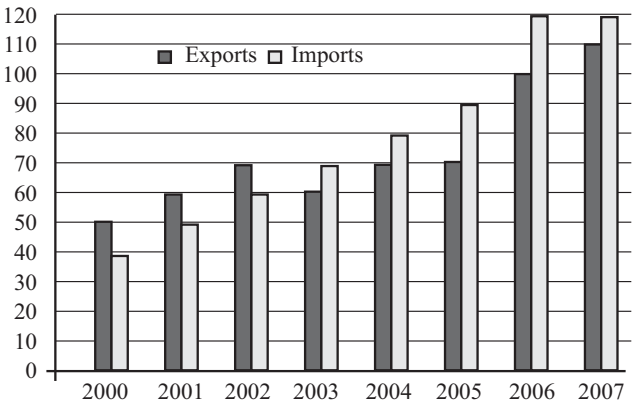
(D) 120, 100, 220, 230, 68

Q.112 Which is the year in which the highest percentage decline is seen in the value of contract secured compared to the preceding year?

(A) 1985 (B) 1988

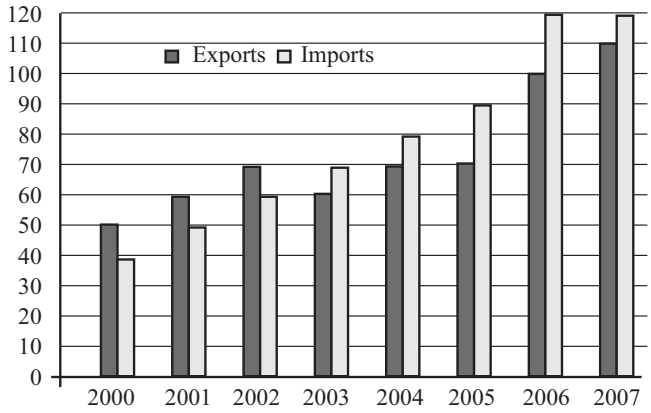
(C) 1984 (D) 1986

Q.113 The exports and imports (in crores of Rs.) of a country from the year 2000 to 2007 are given in the following bar chart. In which year is the combined percentage increase in imports and exports the highest?



[GATE 2015 : IIT Kanpur (CE Set – 1, CSE Set - 3)]

Q.114 The exports and imports (in crores of Rs.) of a country from 2000 to 2007 are given in the following bar chart. If the trade deficit is defined as excess of imports over exports, in which year is the trade deficit 1/5th of the exports?

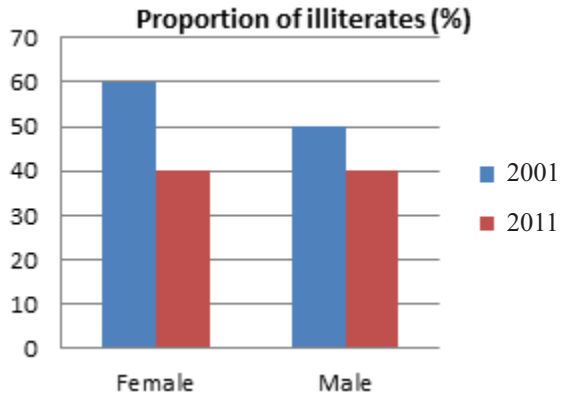


(A) 2005 (B) 2004

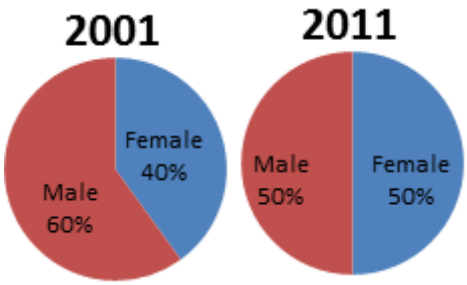
(C) 2007 (D) 2006

[GATE 2014 : IIT Kharagpur (EC Set-1, ME Set-1)]

Q.115 The bar graph in Panel (a) shows the proportion of male and female illiterates in 2001 and 2011. The proportions of males and females in 2001 and 2011 are given in Panel (b) and (c), respectively. The total population did not change during this period. The percentage increase in the total numbers of literates from 2001 to 2011 is _____.



Panel (a)



Panel (b)

Panel (c)

(A) 35.43 (B) 33.43

(C) 30.43 (D) 34.33

Q.116 Given two sets $X=\{1,2,3\}$ and $Y=\{2,3,4\}$, we construct a set z of all possible fractions where the numerators belong to set X and the denominators belong to set Y. The product of elements having minimum and maximum values in the set Z is _____.

[GATE 2019 : IIT Madras]

(A) 1/8 (B) 3/8

(C) 1/12 (D) 1/6

❖❖❖❖

A Answer Keys

Percentage & ITS Applications									
1.	B	2.	B	3.	D	4.	B	5.	D
6.	A	7.	A	8.	A	9.	D	10.	A
11.	D	12.	60	13.	B	14.	B	15.	A
16.	B	17.	D	18.	C	19.	D	20.	A
21.	B	22.	D	23.	D	24.	B	25.	D
26.	A	27.	35000	28.	54.54%	29.	A	30.	240
31.	40%	32.	37.5%	33.	7%	34.	2.5%	35.	A
36.	A	37.	C	38.	A	39.	C	40.	A
41.	27.27%	42.	33.33%	43.	25%	44.	51%	45.	10%
46.	D	47.	32%	48.	57.75	49.	(A) 20% (B) 40%	50.	$9\frac{1}{11}\%$
51.	56.25%	52.	1080	53.	$33\frac{1}{3}\%$	54.	44%	55.	1.01%
56.	31.6%	57.	$33\frac{1}{3}\%$	58.	20%	59.	55	60.	11.1%
61.	C	62.	8 : 7	63.	A	64.	A	65.	C
66.	A	67.	C	68.	B	69.	B	70.	1 : 5
71.	7 : 5	72.	A	73.	D	74.	D	75.	B
76.	D	77.	A	78.	A	79.	B	80.	C
81.	C	82.	37.50%	83.	800	84.	928.2	85.	10%
86.	2	87.	36.36 min.	88.	1.81 Lakh	89.	44%	90.	1500
91.	7350	92.	25%	93.	4%	94.	8	95.	666.67
96.	18 year	97.	2560	98.	$5\frac{1}{2}$	99.	6:4:3	100.	1518.07041
101.	1331	102.	832	103.	11712.8	104.	769	105.	B
106.	A	107.	850	108.	D	109.	B	110.	A
111.	A	112.	B	113.	2006	114.	D	115.	C
116.	B								

❖❖❖❖

5 MISCELLANEOUS

5.1 Agenda : Logarithms

Evaluate :

Q.1 $\log_2 32$

Q.2 $\log_3 \frac{1}{243}$

Q.3 $\log_{5\sqrt{5}} 5$

Q.4 $\log_{100} 0.1$

Q.5 $log_3 5\ log_{25} 27$

Q.6 $log_9 27 - log_{27} 9$

Q.7 $\log_6 \left(216\sqrt{6}\right)$

Q.8 $log_2 log_2 log_4 256 + 2\ log_{\sqrt{2}} 2$

Q.9 $3^{-\frac{1}{2}\log_3 9}$

Q.10 $2^{2-\log_2 5}$

Q.11 $10^{\log_{10} m+\log_{10} n}$

Q.12 $2^{\log_{(2\sqrt{2})} 15}$

Q.13 $(5.8)^{\log_{5.8} 10+1}$

Q.14 $8^{\log_2 \sqrt[3]{121}+\frac{1}{3}}$

Q.15 $\log_2 (\log_3 81)$

Q.16 $\log_\pi \tan(0.25\pi)$

Q.17 $log_{10} tan40^0\ log_{10} tan41^0 \ldots.. log_{10} tan50^0$

Q.18 $\log\tan 1 + \log\tan 2 + \ldots.. + \log\tan 89$ is?

(A) 1 (B) $\frac{1}{2^{1/2}}$

(C) 0 (D) – 1

[GATE 2015 : IIT Kanpur (EC Set - 3, ME Set - 2)]

Q.19 $log_3 4\ log_4 5\ log_5 6\ log_6 7\ log_7 8\ log_8 9$

Q.20 $log_3 2\ log_4 3\ log_5 4\ \ldots.\ log_{15} 14\ log_{16} 15$

Q.21 $\sqrt{\log^2_{0.5} 4}$

Q.22 $81^{(1/\log_5 3)} + 27^{\log_9 36} + 3^{4/\log_7 9}$

Q.23 $(0.16)^{\log_{2.5}\left(\frac{1}{3}+\frac{1}{3^2}+\frac{1}{3^3}+\ldots\infty\right)}$

Q.24 If $\log_x\left(\frac{5}{7}\right) = -\frac{1}{3}$, then the value of x is,

(A) $\frac{343}{125}$ (B) $\frac{125}{343}$

(C) $-\frac{25}{49}$ (D) $-\frac{49}{25}$

[GATE 2015 : IIT Kanpur (EC Set-1)]

Q.25 If $\log_7 \log_5 \left(\sqrt{x+5}+\sqrt{x}\right) = 0$, find the value of x.

(A) 1 (B) 0

(C) 2 (D) None of these

Q.26 For non-negative integers, a, b, c, what would be the value of $a+b+c$ if $\log a + \log b + \log c = 0$?

(A) 3 (B) 1

(C) 0 (D) –1

[GATE 2018 : IIT Guwahati (CE Set – 2)]

Q.27 For integers a, b and c what would be the minimum & maximum value respectively of $a+b+c$ if $\log|a| + \log|b| + \log|c| = 0$?

(A) -3 & 3 (B) -1 & -1

(C) -1 & 3 (D) 1 & 3

[GATE 2018 : IIT Guwahati (ME Set – 1)]

5.2 Agenda : Odd One Out, Coding, Decoding, Missing Letter & Blood Relations

Q.28 Find the odd one from the following group:

W,E,K,O I,Q,W,A

F, N,T,X N,V,B,D

(A) W,E,K,O (B) I,Q,W,A

(C) F, N,T,X (D) N,V,B,D

[GATE 2014 : IIT Kharagpur (EC Set-1, ME Set-1)]

Q.29 Find the odd one in the following group
Q,W,Z,B B,H,K,M W,C,G,J M,S,V,X
(A) Q,W,Z,B (B) B,H,K,M
(C) W,C,G,J (D) M,S,V,X
[GATE 2014 : IIT Kharagpur (EC Set-2, ME Set-2)]

Q.30 If ROAD is written as URDG, then SWAN should be written as :
(A) VXDQ (B) VZDQ (C) VZDP (D) UXDQ
[GATE 2015 : IIT Kanpur (CE Set - 1, CSE Set - 3)]

Q.31 Pick the odd one out in the following :
13, 23, 33, 43, 53
(A) 23 (B) 33
(C) 43 (D) 53
[GATE 2016 : IISc Bangalore (EE Set - 2)]

Q.32 Which number does not belong in the series below : 2, 5, 10, 17, 26, 37, 50, 64
(A) 17 (B) 37
(C) 64 (D) 26
[GATE 2014 : IIT Kharagpur (EE Set - 3, CSE Set - 3)]

Q.33 The number that least fits this set: (324, 441, 97 and 64) is _____.
(A) 324 (B) 441
(C) 97 (D) 64
[GATE 2016 : IISc Bangalore (IN)]

Q.34 Find the missing group of letters in the following series :
BC, FGH, LMNO, _____.
(A) UVWXY (B) TUVWX
(C) STUVW (D) RSTUV
[GATE 2018 : IIT Guwahati (ME Set – 2)]

Q.35 Fill in the missing number in the series : 2 3 6 15 _____ 157.5 630.
[GATE 2014 : IIT Kharagpur (EC Set - 2, ME Set - 2)]

Q.36 Find the missing sequence in the letter series below: A, CD, GHI,?, UVWXY
(A) LMN (B) MNO
(C) MNOP (D) NOPQ
[GATE 2015 : IIT Kanpur (EC Set - 3, ME Set - 2)]

Q.37 Find the next term in the sequence: 7G, 11K, 13M, _____.
(A) 15Q (B) 17Q
(C) 15P (D) 17P
[GATE 2014 : IIT Kharagpur (EC Set - 3, ME Set - 3)]

Q.38 Find the next term in the sequence: 13M, 17Q, 19S, _____.
(A) 21W (B) 21V
(C) 23W (D) 23V
[GATE 2014 : IIT Kharagpur (EC Set - 4, ME Set - 4)]

Q.39 What is the next number in the series : 12 35 81 173 357 _____
[GATE 2014 : IIT Kharagpur (EC Set - 1, ME Set - 1)]

Q.40 The next term in the series 81, 54, 36, 24 … is _____ .
[GATE 2014 : IIT Kharagpur (EC Set - 3, ME Set - 3)]

Q.41 Given the sequence of terms, AD CG FK JP, the next term is
(A) OV (B) OW
(C) PV (D) PW
[GATE 2012 : IIT Delhi (ME, CE, CSE)]

Q.42 If ROAD is written as URDG, then SWAN should be written as :
(A) VXDQ (B) VZDQ
(C) VZDP (D) UXDQ
[GATE 2015 : IIT Kanpur (CE Set - 1, CSE Set - 3)]

Q.43 In a certain code, AMCF is written as EQGJ and NKUF is written as ROYJ. How will DHLP be written in that code?
(A) RSTN (B) TLPH
(C) HLPT (D) XSVR
[GATE 2018 : IIT Guwahati (EE Set – 1)]

Q.44 The missing number m the given sequence 343, 1331, _____, 4913 is
(A) 4096 (B) 2744
(C) 2197 (D) 3375
[GATE 2019 : IIT Madras (EE)]

Q.45 M has a son Q and a daughter R. He has no other children. E is the mother of P and daughter-in-law of M. How is P related to M?
(A) P is the son-in-law of M.
(B) P is the grandchild of M.
(C) P is the daughter-in law of M.
(D) P is the grandfather of M.
[GATE 2016 : IISc Bangalore (IN)]

5.3 Agenda : Simplification, Some More Graphs & Reasoning

Q.46 If the number 715■423 is divisible by 3 (■ denotes the missing digit in the thousandths place), then the smallest whole number in the place of ■ is _____.

(A) 0 (B) 2

(C) 5 (D) 6

[GATE 2018 : IIT Guwahati (EC Set – 1)]

Q.47 What is the value of

$$1+\frac{1}{4}+\frac{1}{16}+\frac{1}{64}+\frac{1}{256}+....?$$

(A) 2 (B) $\frac{7}{4}$

(C) $\frac{3}{2}$ (D) $\frac{4}{3}$

[GATE 2018 : IIT Guwahati (EC Set – 1)]

Q.48 There are eight bags of rice looking alike, seven of which have equal weight and one is slightly heavier. The weighing balance is of unlimited capacity. Using this balance, the minimum number of weighing required to identify the heavier bag is

(A) 2 (B) 3

(C) 4 (D) 8

[GATE 2012 : IIT Delhi (EC, EE)]

Q.49 If the list of letters, P,R,S,T,U is an arithmetic sequence, which of the following are also in arithmetic sequence?

I. 2P, 2R, 2S, 2T, 2U

II. P- 3,R-3,S- 3,T- 3,U- 3

III. P^2 , R^2 , S^2 ,T^2 ,U^2

(A) I only (B) I and II

(C) II and III (D) I and III

[GATE 2015 : IIT Kanpur (EE Set - 2, CSE Set - 2)]

Q.50 The value of $\sqrt{12+\sqrt{12+\sqrt{12+...}}}$ is

(A) 3.464 (B) 3.932

(C) 4.000 (D) 4.444

[GATE 2014 : IIT Kharagpur (EE Set - 2, CSE Set - 2)]

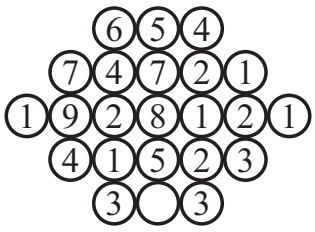
Q.51 What will be the maximum sum of 44, 42, 40,..... ?

(A) 502 (B) 504

(C) 506 (D) 500

[GATE 2013 : IIT Bombay (ME, CSE)]

Q.52 Fill in the missing value



[GATE 2015 : IIT Kanpur (EC Set - 1)]

Q.53 Find the sum of the expression

$$\frac{1}{\sqrt{1}+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+.....+\frac{1}{\sqrt{80}+\sqrt{81}}$$

(A) 7 (B) 8

(C) 9 (D) 10

[GATE 2013 : IIT Bombay (ME, CSE)]

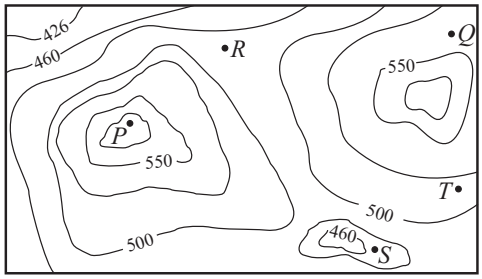
Q.54 What is the sum of the series:

$$\frac{1}{(1\times2)}+\frac{1}{(2\times3)}+\frac{1}{(3\times4)}+.....+\frac{1}{(100\times101)}$$

(A) 99/100 (B) 1/100

(C) 100/101 (D) 101/102

Q.55 A contour line joins locations having the same height above the mean sea level. The following is a contour plot of a geographical region. Contour lines are shown at 25 m intervals in this plot. If in a flood the water level rises to 525 m, which of the villages *P*, *Q*, *R*, *S*, *T* gets submerged?

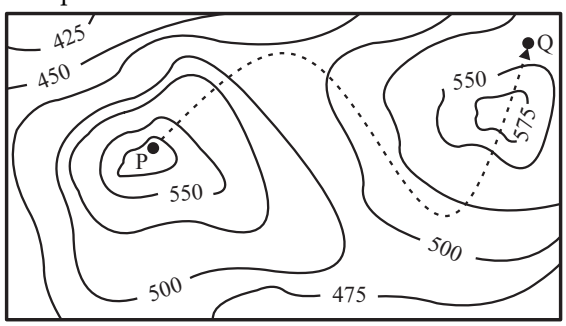


(A) *P*, *Q* (B) *P*, *Q*, *T*

(C) *R*, *S*, *T* (D) *Q*, *R*, *S*

[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]

Q.56 A contour line joins locations having the same height above the mean sea level. The following is a contour plot of a geographical region. Contour lines are shown at 25 m intervals in this plot.



The path from P to Q is best described by

(A) Up-Down-Up-Down

(B) Down-Up-Down-Up

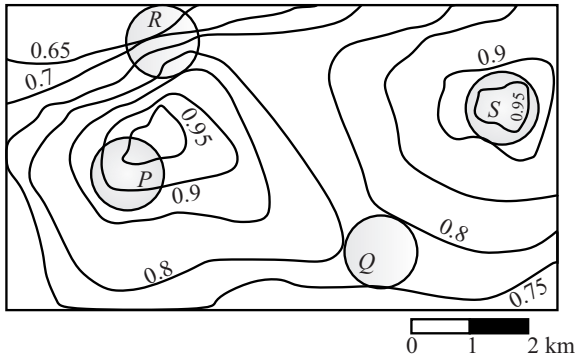
(C) Down-Up-Down

(D) Up-Down-Up

[GATE 2017 : IIT Roorkee (EC, BT, PI Set – 1)]

Q.57 An air pressure contour line joins locations in a region having the same atmospheric pressure. The following is an air pressure contour plot of a geographical region. Contour lines are shown at 0.05 bar intervals in this plot.

[EE (S2)/CS(S2)]



If the possibility of a thunderstorm is given by how fast air pressure rises or drops over a region, which of the following regions is most likely to have a thunderstorm?

(A) *P* (B) *Q*

(C) *R* (D) *S*

[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]

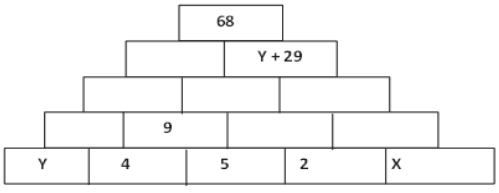
Q.58 Find the sum of the series :

$$\frac{1}{3}+\frac{2}{3^2}+\frac{3}{3^3}+\frac{4}{3^4}+\ldots\infty$$

Q.59 Find the sum of the series :

$$\frac{1}{3}+\frac{4}{3^2}+\frac{9}{3^3}+\frac{16}{3^4}+\ldots\infty$$

Q.60 In the figure, number in any cell is obtained by adding two numbers in the cells directly below it. For example, 9 in the second row is obtained by adding the two numbers 4 and 5 directly below it. The value of $X - Y$ is



(A) 2 (B) 3

(C) 4 (D) 5

Q.61 Saira, Mumtaz and Zeenat have a ball, a pen and a pencil, and each girl has just one object in hand.

Among the following statements, only one is true and the other two are false.

I. Saira has a ball.

II. Mumtaz does not have the ball.

III. Zeenat does not have the pen.

Who has the ball?

(A) Saira

(B) Mumtaz

(C) Zeenat

(D) Cannot be determined

Q.62 TEES AND ELS

Of Annette, Bernice, and Cynthia:

1. Each belongs either to the Tee family whose members always tell the truth or to the E1 family whose members always lie.
2. Annette says "Either I belong or Bernice belongs to a different family from the other two.'

Whose family do you know the name of?

Directions for Questions 16: Answer the following questions based on the information given below:

Q.63 On 19th September 2007 somebody stole a mobile phone from an electronics shop. The police arrested five suspects Vivek, Kartik Rajat, Pranav and Ritam. They gave their statements to the police officer. Given below is a summary of their statements:

Kartik : It was not Vivek, it was Ritam.
Ritam : It was not Pranav. It was not Vivek.
Pranav : It was Vivek. It was not Kartik.
Rajat : It was Pranav. It was Ritam.
Vivek : It was Rajat. It was not Kartik.

It was known that each suspect told exactly one lie. Who stole the mobile phone?

(A) Kartik (B) Ritam

(C) Pranav (D) Rajat

(E) Vivek

Q.64 There are three boxes. One contains apples, another contains oranges and the last one contains both apples and oranges. All three are known to be incorrectly labelled. If you are permitted to open just one box and then pull out and inspect only one fruit, which box would you open to determine the contents of all three boxes?

(A) The box labelled 'Apples'

(B) The box labelled 'Apples and Oranges'

(C) The box labelled 'Oranges'

(D) Cannot be determined

[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]

Q.65 AFTER – DINNER DRINK :

Abigail , Bridget and Claudia often eat dinner out :

1. Each orders either coffee or tea after dinner.
2. If Abigail orders coffee, then Bridget orders the drink that Claudia order.
3. If Bridget orders coffee, then Abigail orders the drink that Cludia doesn't order.
4. If Claudia orders tea, then Abigail orders the drink that Bridget orders.

Who do you know always orders the same drink after dinner ?

Q.66 P, Q and R talk about S's car collection. P states that S has at least 3 cars. Q believes that S has less than 3 cars. R indicates that to his knowledge, S has at least one car. Only one of P, Q and R is right. The number of cars owned by S is

(A) 0
(B) 1
(C) 3
(D) Cannot be determined

[GATE 2017 : IIT Roorkee (ME Set – 1)]

Q.67 THE TENNIS PLAYERS :

Zita , her brother , her daughter and her son are tennis players. As a game of doubles is about to begin :

1. Zita's brother is directly across the net from her daughter.
2. Her son is diagonally across the net from the worst player's sibling.
3. The best player and the worst player are on the same side of the net.

Who is the best player?

Q.68 Each of the letters arranged as below represents a unique integer from 1 to 9. The letters are positioned in the figure such that $(A \times B \times C)$, $(B \times G \times E)$ and $(D \times E \times F)$ are equal. Which integer among the following choices cannot be represented by the letters A, B, C, D, E, F and G?

A		D
B	G	E
C		F

(A) 4 (B) 5
(C) 6 (D) 9

[GATE 2018 : IIT Guwahati (CE Set – 1)]

Q.69 RELATIONS :

Lee , Dale and Terry are related to each other.

1. Among the three are Lee's legal Spouse , Dale's sibling and Terry's Sister-in-law.
2. Lee's legal spouse and Dale's sibling are of the same sex.

Who do you know is married man?

Q.70 *P* looks at *Q* while *Q* looks at *R*. *P* is married, *R* is not. The number of pairs of people in which a married person is looking at an unmarried person is

(A) 0
(B) 1
(C) 2
(D) Cannot be determined

[GATE 2017 : IIT Roorkee (ME Set – 2)]

Q.71 EQUAL PRODUCTS :

A D
B E
C F
G

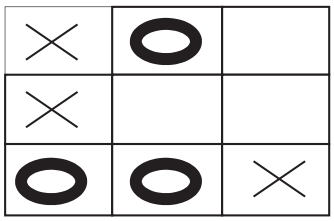
Each of the seven digits from 0,1,2,3,4,5,6,7,8 and 9 is :

1. Represented by a different letter in the figure.
2. Positioned in the figure above so that A × B × C, B × G × E and D × E × F are equal.

Which digit does G represent ?

Q.72 X AND 0

The game of Tic-tac-toe is played in a large square divided into nine small squares.



1. Each of two players in turn places his or her mark – usually X or O – in a small square.
2. The player who first gets three marks in a horizontal, vertical, or diagonal line wins.
3. A player will always place his or her mark in a line that already contains (a) two of his or her own marks or (b) two of his her opponent's marks – giving]

(a) priority over
(b) only the last mark to be placed in the game shown above is not given.

Which mark – X or O – wins the game?

Q.73 THE GUARDS

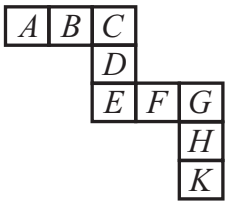
Art, Bob, Cab and Ida are guards in a museum.

1. Each of Art, Bob, and Cab stands guard on exactly four days every week.
2. Exactly two persons stand guard together every day.
3. No person stands guard three days in a row.
4. Here is a partial listing that shows when they stands guard every week:

Sun	Art	Bob
Mon	Cab	?
Tue	Ida	?
Wed	Art	?
Thurs	Bob	?
Fri	Cab	?
Sat	Ida	?

Who does not guard with Ida?

Q.74 Each of the letters in the figure below represents a unique integer from 1 to 9. The letters are positioned in the figure such that each of $(A+B+C), (C+D+E), (E+F+G)$ and $(G+H+K)$ is equal to 13. Which integers does E represent?



(A) 1 (B) 4

(C) 6 (D) 7

[GATE 2018 : IIT Guwahati (CE Set – 2)]

Q.75 THE JUDGE'S WIFE :

A	1	O	15
B	2	P	16
C	3	Q	17
D	4	R	18
E	5	S	19
F	6	T	20
G	7	U	21
H	8	V	22
I	9	W	23
J	10	X	24
K	11	Y	25
L	12	Z	26
M	13		
N	14		

Edwin is a judge and a numerologist. He is married to a woman whose name :

1. Has a " product " that is the same as that for JUDGE.; using the correspondence of letters and numbers above , this product is $10 \times 21 \times 4 \times 7 \times 5$.
2. Has no letter in common with JUDGE.(To find a woman whose name satisfied the conditions above in relation to EDWIN would have been impossible.)
3. Has no third letter of the alphabet because 3 is his unlucky number.
5. Has its letter in alphabetical order when the first letter and the second letter are interchanged.

What is the name of the judge's wife ?

Q.76 AFTER – DINNER DRINK :

Abigail , Bridget and Claudia often eat dinner out :

1. Each orders either coffee or tea after dinner.
2. If Abigail orders coffee, then Bridget orders the drink that Claudia order.
3. If Bridget orders coffee, then Abigail orders the drink that Cludia doesn't order.
4. If Claudia orders tea, then Abigail orders the drink that Bridget orders.

Who do you know always orders the same drink after dinner ?

Q.77 The sum of the digits of a two-digit number is 12. If the new number formed by reversing the digits is greater than the original number by 54, find the original number.

(A) 39 (B) 57

(C) 66 (D) 93

[GATE 2016 : IISc Bangalore (CE Set - 2)]

Directions for questions 28 and 29 : Read the given information carefully and answer the questions that follow.

Ratan, Anil, Pinku and Gaurav are brothers of Rakhi, Sangeeta, Pooja and Saroj, not necessarily in that order. Each boy has one sister and the names of brothers and sisters do not begin with the same letter. Pinku and Gaurav are not Saroj's or Sangeeta's brothers. Saroj is not Ratan's sister.

Q.78 Pooja's brother is

(A) Ratan (B) Anil

(C) Pinku (D) Gaurav

(E) Cannot be determined

Q.79 Which of the following are brother and sister?

(A) Ratan and Pooja

(B) Anil and Saroj

(C) Pinku and Sangeeta

(D) Gaurav and Rakhi

(E) Gaurav and Pooja

Q.80 Each of P, Q, R, S, W, X, Y and Z has been married at most once. X and Y married and have two children P and Q, Z is grandfather of the daughter 'S' of P. Further Z and W married and are parents of R. Which one of the following must necessarily be FALSE?

(A) X is the mother in law to R
(B) P and R are not married to each other
(C) P is son of X and Y
(D) Q cannot be married to R

[GATE 2017 : IIT Roorkee (EC Set – 2)]

Q.81 Rahul, Murali, Srinivas and Arul are seated around a square table. Rahul is sitting to the left of Murali, Srinivas is sitting to the right of Arul. Which of the following pairs are seated opposite each other?

(A) Rahul and Murali
(B)Srinivas and Arul
(C) Srinivas and Murali
(D)Srinivas and Rahul

[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]

Common Data For Questions 82 to 87

Read the given information carefully and answer the questions that follow.

Four persons A, B, C and D are camping at four campsites E, F, G and H, not necessarily in that order. The campsites are located on four different lakes I, J, K and L (not necessarily in that order) which are in four different states M, N, O and P (not necessarily in that order).

I. B is camping on K.
II. H is on J, which is in N.
III. The person at I, a native of P, camps only in that state.
IV. D is at F.
V. A is camping in O.

Q.82 Where is B camping?

(A) At E (B) In M
(C) On L (D) At F
(E) In P

Q.83 I is where

(A) F is located
(B) A is camping
(C) the campsite in which O is located
(D) the campsite G is located
(E) None of these

Q.84 On the basis of the information given, it is possible to deduce that

I. A is not at H
II. C is in P
III. D is not at E

(A) I only (B) II only
(C) III only (D) I and III only
(E) II and III only

Q.85 is where

I. L is located
II. F is located

(A) I only (B) II only
(C) I and II both (D) I or II but not both
(E) None of these

Q.86 Which of the following is true of L?

(A) C is camping there
(B) D is camping there
(C) It is in M
(D) A is camping there
(E) None of these

Q.87 Which of the following cannot be determined on the basis of the information given?

(A) Which state is K in?
(B) Who is camping at E?
(C) Which campsite is in P?
(D) Who is camping in N?
(E) None of these

Q.88 The head of a newly formed government desires to appoint five of the six selected members P, Q, R, S, T and U to portfolios of Home, Power, Defense, Telecom, and Finance. U does not want any portfolio if S gets one of the five. R wants either Home or Finance or no portfolio. Q says that if S gets either Power or Telecom, then she must get the other one. T insists on a portfolio if P gets one.

Which is the valid distribution of portfolios?

(A) P-Home, Q-Power, R-Defense, S-Telecom, T-Finance
(B) R-Home, S-Power, P-Defense, Q-Telecom, T-Finance
(C) P-Home, Q-Power, T-Defense, S-Telecom, U-Finance
(D) Q-Home, U-Power, T-Defense, R-Telecom, P-Finance

[GATE 2015 : IIT Kanpur (CE Set - 1, CSE Set - 3)]

Q.89 There are five buildings called V, W, X, Y and Z in a row (not necessarily in that order). V is to the West of W, Z is to the East of X and the West of V, W is to the West of Y. Which is the building in the middle?

(A) V (B) W

(C) X (D) Y

[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]

Common Data for Questions 90 and 91

Directions for questions 90 and 91 : Read the following information and answer the questions that follow.

ABCABC is a six – digit number. (Therefore, both the As, both the Bs and both the Cs are the same.) C is an even digit.

Q.90 Is ABCABC divisible by 14?

(A) Yes

(B) No

(C) Divisible if A is even

(D) divisible if B is even

(E) None of these

Q.91 Is ABCABC divisible by 13?

(A) Yes

(B) No

(C) Divisible if A = 2

(D) Divisible if B = 5

(E) None of these

❖❖❖❖

A Answer Keys

Miscellaneous									
1.	5	2.	–5	3.	$\frac{2}{3}$	4.	$-\frac{1}{2}$	5.	$\frac{3}{2}$
6.	$\frac{5}{6}$	7.	$\frac{7}{2}$	8.	5	9.	$\frac{1}{3}$	10.	$\frac{4}{5}$
11.	mn	12.	$\sqrt[3]{225}$	13.	58	14.	242	15.	2
16.	0	17.	0	18.	C	19.		20.	$\frac{1}{4}$
21.	–2	22.	890	23.	4	24.	A	25.	D
26.	A	27.	A	28.	D	29.	C	30.	B
31.	B	32.	C	33.	C	34.	B	35.	45
36.	C	37.	B	38.	C	39.	725	40.	16
41.	A	42.	B	43.	C	44.	C	45.	B
46.	B	47.	D	48.	A	49.	B	50.	C
51.	C	52.	3	53.	B	54.	C	55.	C
56.	C	57.	C	58.	$\frac{3}{4}$	59.	$\frac{1}{3}$	60.	D
61.	B	62.	Bernice	63.	C	64.	B	65.	Abigail
66.	A	67.	Zita's Brother	68.	B	69.	Dale	70.	B
71.	2	72.	0	73.	Art	74.	B	75.	Fanny
76.	Abigail	77.	A	78.	D	79.	B	80.	B
81.	C	82.	B	83.	A	84.	D	85.	A
86.	D	87.	B	88.	B	89.	A	90.	A
91.	A								

❖❖❖❖

6 VERBAL REASONING

6.1 LOGICAL CONNECTIVES

Each question below consists of a main statement followed by four numbered statements. From the numbered statements, select the one that logically follows the main statement

Q.1 If movie is superhit, then I watch it.

(A) I watched a movie means it is a superhit.

(B) The movie is superhit, hence I do not watch it.

(C) I did not watch a movie, though it was superhit.

(D) I did not watch a movie implies that the movie was not superhit.

Q.2 Whenever it is cold, I wear a jacket.

(A) It is cold implies I am wearing a jacket.

(B) I did not wear a jacket implies it was not cold.

(C) It is cold but I did not wear the jacket.

(D) Both (1) and (2)

Q.3 Either Shaheen cooks or Salim brings the food parcel.

(A) Shaheen cooks means salim will not bring the food parcel.

(B) Salim did not bring the food parcel hence Shaheen cooked.

(C) Shaheen is cooking hence Salim has brought the food parcel

(D) Salim did not bring food parcel implies that Shaheen did not cook.

Q.4 Only if Raj does not come, then Geetika will come to the party.

(A) Raj came hence Geetika will also come to the party.

(B) Geetika will not come to the party hence Raj will come.

(C) Geetika has come to the party means Raj is not coming.

(D) Both (1) and (3)

Q.5 Unless I have money, I cannot enjoy my weekend.

(A) I have money, so I can enjoy my weekend.

(B) I can enjoy my weekend means I have money

(C) I do not have money but I can enjoy my weekend

(D) None

Q.6 If I can swim, then I can clear the exam.

(A) I can swim hence I can clear the exam.

(B) I cannot clear the exam implies I cannot swim.

(C) I can swim hence I cannot clear the exam.

(D) Both (1) and (2)

Q.7 India will talk, only if the terrorists are handed over.

(A) The terrorists are handed over, hence India will talk

(B) India will not talk implies that the terrorists have not been handed over.

(C) India will talk though the terrorists are not handed over.

(D) India will talk implies the terrorists are handed over.

Q.8 Whenever there is demand, there will be supply

(A) There is supply hence there is demand.

(B) There is demand, hence there will be supply.

(C) There is no supply, implies that there is no demand.

(D) Both (1) and (2)

Q.9 Suhasita purchases either a cooler or a refrigerator.

(A) Suhasita is not purchasing a cooler implies she is purchasing a refrigerator.

(B) Suhasita is not purchasing a refrigerator implies she is purchasing a cooler

(C) Suhasita is purchasing a refrigerator implies she will not purchase a cooler.

(D) Both (1) and (2)

Q.10 I will not have enemies, unless I fight.

(A) I fight implies I will have enemies.

(B) I do not have enemies, if I do not fight.

(C) I do not fight implies I will not have enemies.

(D) Both (3) and (4)

Directions for Questions 11 to 16

In each question, there is a main statement followed by four statements A, B, C and D. From the choices, choose the pair in which the first statement implies the second statement and the two are logically consistent with the main statement.

Q.11 Teachers can teach, only if students are well mannered.

(a) Teachers can teach.

(b) Students are not well mannered.

(c) Teachers cannot teach.

(d) Students are well mannered.

(A) AB (B) BC

(C) DA (D) CD

Q.12 Prajakta is heathly, whenever she is happy.

(a) Prajakta is not happy

(b) Prajakta is happy.

(c) Prajakta is healthy.

(d) Prajakta is not healthy.

(A) CB (B) BC

(C) DA (D) BC and DA

Q.13 Rohit is suffering either from malaria or from typhoid.

(a) Rohit is not suffering from typhoid. (b) Rohit is suffering from malaria.

(c) Rohit is not suffering from malaria. (d) Rohit is suffering from typhoid.

(A) AB (B) AC

(C) BC (D) DC

Q.14 Manjula works, unless she is married.

(a) Manjula is not married

(b) Manjula is married

(c) Manjula works

(d) Manjula does not work.

(A) CA (B) BD

(C) BD and AC (D) AC and DB

Q.15 If tea is sweet, then Samarth cannot drink it.

(a) Samarth can drink tea.

(b) Tea is not sweet.

(c) Samarth cannot drink tea.

(d) Tea is sweet.

(A) CB (B) AB

(C) AB and BC **(D)** AB and DC

Q.16 Nisha will do an MBA only if she gets admission into a good college.

(a) Nisha will not do MBA.

(b) Nisha got admission into a good college.

(c) Nisha did not get admission into a good college.

(d) Nisha will do MBA.

(A) BD (B) DB

(C) AC (D) CD

Directions for Questions 17 to 26

Each question below consists of a main statement followed by four numbered statements. From the numbered statements, select the one that logically follows the main statement.

Q.17 If Ankita eats pastry, then it is a black forest or a pineapple.

(A) Ankita eats pastry but it is not a pineapple, means it is a black forest.

(B) Ankita eats pastry but it is not a black forest, means it is a pineapple.

(C) The pastry is neither a pineapple nor a black forest, means Ankita does not eat the pastry.

(D) All the above.

Q.18 If you want to stay fit, then you must eat nutricious food and exercise.

(A) You did not eat nutricious food, hence you cannot stay fit.

(B) You did not exercise, implies you cannot stay fit

(C) You ate nutricious food and exercised implies you have stayed fit

(D) Both (1) and (2)

Q.19 Yaseem plays cricket, only if he wears blue or white.

(A) Yaseem plays cricket, implies he wears blue and white

(B) Yaseem plays cricket but he does not wear blue hence he wears white.

(C) Yaseem wears neither blue nor white implies he may play cricket.

(D) None of these.

Q.20 Sunil cannot meet his friends or his family, unless he has a job.

(A) Sunil met his friend and his family implies he has a job

(B) Sunil does not have a job and cannot meet his family hence he cannot meet his friends.

(C) Sunil does not have a job but he met his family implies he cannot meet his friends.

(D) Both (1) and (3)

Q.21 Only if there is a sale, I will buy clothes or cosmetics.

(A) I have bought clothes and cosmetics means there is a sale.

(B) I have bought cosmetics hence there is a sale.

(C) I have bought clothes hence there is a sale.

(D) All the above

Q.22 Unless you take medicines, you will not recover, and will not be able to walk.

(A) You recovered means you have taken medicines.

(B) You are not able to walk means you have not taken medicines.

(C) You have not taken medicines hence you will not recover but you will be able to walk.

(D) You have taken medicines, hence you will recover.

Q.23 If Ganshyam goes to U.S.A, his mother or his brother will accompany him.

(A) Ganshyam is going to U.S.A. but his brother is not accompanying him implies his mother will accompany him.

(B) Neither Ganshyam's mother nor his brother is accompanying him means Ganshyam is not going to U.S.A.

(C) Ghanshyam is not going to U.S.A., hence neither his mother nor his brother are accompanying him.

(D) Both (1) and (2)

Q.24 Whenever Preeti watches T.V., then she watches movies and sports.

(A) Preeti is not watching sports implies she is watching T.V.

(B) Preeti is not watching movies implies she is not watching T.V.

(C) Preeti is neither watching movies nor sports hence she must be watching something else on T.V.

(D) Both (1) and (2)

Q.25 Sagar will marry Sheela, only if she is a graduate and a good cook.

(A) Sheela is a good cook but not a graduate hence Sagar will not marry Sheela.

(B) Sagar will marry Sheela since she is a good cook though she is not a graduate.

(C) Sheela is a graduate and a good cook implies Sagar will marry Sheela.

(D) (1), (3) and (4)

6.2 SYLLOGISM

In each question a set of six statements is given, followed by four answer choices. Each of the answer choices has a combination of three statements from the given set of six statements. You are required to identify the answer choice in which the statements are logically related.

Q.26

A. All green is blue

B. All green is white

C. All green is black

D. All black is white

E. All blue is yellow

F. All blue is white

(A) ABF (B) AEF

(C) CDB (D) CBE

Q.27 A. Some communists are socialists
B. All socialists are Leninists
C. Some socialists are Leninists
D. Marxists are not capitalists
E. All leninists are communists
F. All communists are socialists
(A) CEA (B) CEF
(C) ABE (D) BEF

Q.28 Read the statements :
All women are entrepreneurs.
Some women are doctors
Which of the following conclusions can be logically inferred from the above statements?
(A) All women are doctors
(B) All doctors are entrepreneurs
(C) All entrepreneurs are women
(D) Some entrepreneurs are doctors

[GATE 2014 : IIT Kharagpur (ME Set - 1, EC Set - 1)]

Q.29 Given below are two statements followed by two conclusions. Assuming these statements to be true, decide which one logically follows.
Statements : I. All film stars are playback singers. II.
All film directors are film stars
Conclusions :
I. All film directors are playback singers.
II. Some film stars are film directors.
(A) Only conclusion I follows
(B) Only conclusion II follows
(C) Neither conclusion I nor II follows
(D) Both conclusions I and II follow

[GATE 2015 : IIT Kanpur (EC Set - 2, ME Set 1)]

Q.30 Given below are two statements followed by two conclusions. Assuming these statements to be true, decide which one logically follows.
Statements : I. No manager is a leader.
II. All leaders are executives.
Conclusions : I. No manager is an executive
II. No executive is a manager.
(A) Only conclusion I follows.
(B) Only conclusion II follows.
(C) Neither conclusion I nor II follows.
(D) Both conclusions I and II follow.

[GATE 2015 : IIT Kanpur (ME Set - 3, IN)]

Q.31 All hill-stations have a lake. Ooty has two lakes.
Which of the statement(s) below is/are logically valid and can be inferred from the above sentences?
(i) Ooty is not a hill-station.
(ii) No hill-station can have more than one lake.
(A) (i) only (B) (ii) only
(C) both (i) and (ii) (D) neither (i) nor (ii)

[GATE 2016 : IISc Bangalore (EE Set - 1, CSE Set - 2)]

Q.32 Some tables are shelves. Some shelves are chairs. All chairs are benches. Which of the following conclusions can be deduced from the preceding sentences?
(i) At least one bench is a table
(ii) At least one shelf is a bench
(iii) At least one chair is a table
(iv) All benches are chairs
(A) Only (i) (B) Only (ii)
(C) Only (ii) and (iii) (D) Only (iv)

[GATE 2017 : IIT Roorkee (EC,BT,PI Set - 1)]

In each question four sets of three sentences are given. You have to identify whether the three sentences in each of these sets are logically related.

Q.33 A. All plant are moon. All moon are starts. All starts are plants.
B. All men are thinkers. All poets are thinkers. All men write poetry.
C. Orange is a seasonal fruit. Guava is a seasonal fruit. Orange are guavas.
D. All tubes are handles. All cups are handles. Some cups may be tubes.
(A) D (B) A and B
(C) C and B (D) B

Consider the following sentences :

Q.34 All benches are beds. No bed is a bulb. Some bulbs are lamps.
Which of the following can be inferred?
(i) Some beds are lamps.
(ii) Some lamps are beds.
(A) Only i (B) Only ii
(C) Both i and ii (D) Neither i nor ii

[GATE 2017 : IIT Roorkee (CE, CH, Set - 1)]

Consider the following three statements

Q.35 (i) Some roses are red.

(ii) All red flowers fade quickly.

(iii) Some roses quickly fade quickly.

Which of the following statements can be logically inferred from the above statements?

(A) If (i) true & (ii) false, then (ii) false

(B) If (i) true & (ii) false, then (iii) true

(C) If (i) & (ii) are true, then (iii) true

(D) If (i) & (ii) false, then (iii) false

[GATE 2018 : IIT Guwahati (CE Set – 2)]

Q.36 Fact : If it rains, then the field is wet.

Read the following statements :

(i) It rains

(ii) The field is not wet

(iii) The field is wet

(iv) It did not rain

Which one of the options given below is **NOT** logically possible based on the given fact?

(A) If (iii), then (iv) (B) If (i), then (iii)

(C) If (i), then (ii) (D) If (ii), then (iv)

[GATE 2016 : IISc Bangalore (ME Set - 2)]

Q.37 An award-winning study by a group of researchers suggests that men are as prone to buying on impulse as women but women feel more guilty about shopping. Which one of the following statements can be inferred from the given text?

(A) All men and women indulge in buying on impulse.

(B) Some men and women indulge in buying on impulse.

(C) Few men and women indulge in buying on impulse

(D) Many men and women indulge in buying on impulse

[GATE 2019 : IIT Madras]

2.3Verbal Reasoning / Critical Reasoning

Q.38 According to Rakesh, Mr Sharma is in deep trouble. His elder daughter, returned home after a painful divorce. Unfortunately, his second daughter, of age 30 is still unmarried. Mr Sharma is getting old. He is already 65.

The assumption in Rakesh's conclusion is

(A) Mr. Sharma is not fit to work now.

(B) Mr. Sharma will pass away soon, as he is getting old.

(C) Unmarried daughters are dangerous for their parents.

(D) Unmarried or divorced daughter's bad fortune can pose problems for their elderly father.

Q.39 An eight-year old Saudi Arabian girl who was married off by her father to a 58-year-old man has been told she cannot divorce her husband until she reaches puberty. Lawyer Abdu Jtili said the divorce petition was filed by the unnamed girl's divorced mother in August after the marriage contract was signed by her father and the groom. "The judge has dismissed the plea because she [the mother] does not have the right to file, and ordered that the plea should be filed by the girl herself when she reaches puberty," lawyer Abdullah Jtili told the AFP news agency.

It can be inferred from the above paragraph that

(A) Judges are cruel in Saudi Arabia.

(B) The eight-year old girl is considered legally married.

(C) In Saudi Arabia, women cannot file for a divorce.

(D) Girls below puberty do not have marital rights in Saudi Arabia.

Q.40 Indians have a bad habit of spitting in public places. Most of the walls in Government Buildings have turned red or become very dirty thanks to the constant spitting by betel-chewing Indians. But Jankidas, the manager of the public works department in Jhandewalan has come out with a novel idea. He has installed religious signs or painted religious pictures on the walls in the corridors leading to his department. He is sure that no Indian would spit on the corridor walls leading to his department.

It has been assumed by Jankidas that

(A) The corridors leading to his department are dirty.

(B) Indians fear the wrath of the Gods.

(C) Indians do not eat betel near religious pictures.

(D) Indians have regard for religion.

Q.41 Jnana and Bhakti are two commonly adopted spiritual paths by spiritually inclined people. The Jnani considers Bhakti to be only a means to Moksha. Bhakti leads to purification of the mind. The purified mind becomes fit to listen to Jnana which in due course of time results in Moksha. The Bhakta on the other hand is not interested in Moksha. He feels that Bhakti is the means and also the goal.

It can be inferred from the above paragraph that

(A) Jnanis and Bhaktas have an inherent dislike for each other.

(B) Jnanis and Bhaktas both strive for a pure mind.

(C) The Bhakta is idle most of the time as his means and goal are the same.

(D) None of the above.

Q.42 Computers were invented for performing only high-end useful computations. However, it is no understatement that they have taken over our world today. The internet, for example, is ubiquitous. Many believe that the internet itself is an unintended consequence of the original invention. With the advent of mobile computing on our phones, a whole new dimension is now enabled. One is left wondering if all these developments are good or, more importantly, required.

Which of the statement(s) below is/are logically valid and can be inferred from the above paragraph?

(i) The author believes that computers are not good for us.

(ii) Mobile computers and the internet are both intended inventions

(A) (i) only (B) (ii) only

(C) both (i) and (ii) (D) neither (i) nor (ii)

[GATE 2016 : IISc Bangalore (EE Set - 1, CSE Set - 2)]

Q.43 Nuendo is a studio software which is used by most of the recordists in San Hose, America. It allows one to record 25 tracks simultaneously. It is faster as compared to 'cubase' - the software which was used by the recordists earlier. Hence, nuendo should be used by recordists in India also.

The conclusion above would be strengthened if it was true that

(A) Indians prefer 'cubase' as it does not demand high system requirements.

(B) Lot of time is wasted in Indian studios due to inefficient software

(C) Indian recordists record a maximum of 10 tracks at a time.

(D) None of the Indian recordists have traveled to San Hose.

Q.44 Geneticists say that are very close to confirming the genetic roots of psychiatric illnesses such as depression and schizophrenia, and consequently, that doctors will be able to eradicate these diseases through early identification and gene therapy.

On which of the following assumptions dose the statement above rely?

(A) Strategies are now available for eliminating psychiatric illness.

(B) Certain psychiatric illness have a genetic basis.

(C) All human disease can be traced back to genes and how they are expressed.

(D) In the future, genetics will become the only relevant field for identifying psychiatric illness.

[GATE 2014 : IIT Kharagpur (EE, Set – 1, CSE Set - 1)]

Q.45 In Philosophy, there are no solved problems, there are only unsolved problems. Once a philosophical problem gets solved, then it goes outside philosophy to become either a part of some established knowledge system or becomes an independent discipline. The Philosopher's job ends when a problem is settled, and then there is no more philosophy in it.

A suitable conclusion from the above paragraph would be

(A) Philosophy can exist only when a problem is unsolved.

(B) Problems exist only in philosophy.

(C) Philosophers are generally jobless and indifferent to the world of problems.

(D) There are innumerable problems to be solved in this world.

Q.46 Ann Trason, Scott Jurek, Matt Carpenter. These are the megastars of ultra-distance running, athletes who pound out not just marathons, but dozens of them back-to-back, over Rocky Mountain passes and across the scorching floor of Death Valley. If their names are unfamiliar, it's probably because this type of extreme running is almost universally seen as a fringe sport, the habit of the superhumanly fit, the masochistic, the slightly deranged.

Which of the following can be inferred from the above statement?

(A) The ultra-marathoners are using their bodies for endurance running.

(B) Being able to run for extended lengths of time is an adapted trait.

(C) Extreme running is not for the normal run-of-the mill sportsperson.

(D) Extreme sports people remain unknown because of the stress involved.

Q.47 Wanted Temporary, Part-time persons for the post of Field Interviewer to conduct personal interviews to collect and collate economic data. Requirements: High School-pass, must be available for Day, Evening and Saturday work.

Transportation paid, expenses reimbursed.

Which one of the following is the best inference from the above advertisement?

(A) Gender-discriminatory

(B) Xenophobic

(C) Not designed to make the post attractive

(D) Not gender-discriminatory

[GATE 2012 : IIT Delhi (EE, CSE, ME, CE)]

Q.48 Consumers are using their mobile phones to download tens of millions of games, songs, ring tones and video programs. And they shell out money for these items, even as they resist paying for similar digital goodies online using their computers.

It is a curious equation: pay for stuff on a tiny, low-resolution screen while getting some of the very same games and video free on a fancy wide-screen monitor.

If all of the statements in the passage are true, each of the following must also be true

EXCEPT :

(A) Mobile phones are a status symbol for today's consumers.

(B) The companies producing mobile content are thriving.

(C) The users enjoy the availability of music download at their fingertips.

(D) Stuff on computer seem to be easily available so why pay money.

Q.49 Abhishek is elder to Savan, Savan is younger to Anshul. The correct relations is

(A) Abhishek is elder to Anshul

(B) Anshul is elder to Abhishek

(C) Abhishek and Anshul are of same age

(D) No conclusion can be drawn

[GATE 2013 : IIT Bombay (CE)]

Q.50 In a group of four children, Som is younger to Riaz. Shiv is elder to Ansu. Ansu is youngest in the group. Which of the following statements is/are required to find the eldest child in the group?

Statements :

1. Shiv is younger to Riaz.
2. Shiv is elder to Som.

(A) Statement 1by itself determines the eldest child.

(B) Statement 2 by itself determines the eldest child.

(C) Statement 1 and 2 are both required to determine the eldest child.

(D) Statement 1 and 2 are not sufficient to determine the eldest child.

[GATE 2014 : IIT Kharagpur (CE Set - 2, IN)]

Q.51 Consider five people – Mita, Ganga, Rekha, Lakshmi and Sana. Ganga is taller than both Rekha and Lakshmi. Lakshmi is taller than Sana. Mita is taller than Ganga.

Which of the following conclusions are true?

1. Lakshmi is taller than Rekha
2. Rekha is shorter than Mita
3. Rekha is taller than Sana
4. Sana is shorter than Ganga

(A) 2 and 4 (B) 1 only
(C) 1 and 3 (D) 3 only

[GATE 2019 : IIT Madras (EE)]

Q.52 Read the following paragraph and choose the correct statement. Climate change has reduced human security and threatened human well being. An ignored reality of human progress is that human security largely depends upon environmental security. But on the contrary, human progress seems contradictory to environmental security. To keep up both at the required level is a challenge to be addressed by one and all. One of the ways to curb the climate change may be suitable scientific innovations, while the other may be the Gandhian perspective on small scale progress with focus on sustainability.

(A) Human progress and security are positively associated with environmental security.
(B) Human progress is contradictory to environmental security.
(C) Human security is contradictory to environmental security.
(D) Human progress depends upon environmental security.

[GATE 2015 : IIT Kanpur (EC Set - 1)]

Q.53 Choose the most appropriate phrase from the options given below to complete the following sentence.

India is a post-colonial country because

(A) It was a former British colony
(B) Indian Information Technology professionals have colonized the world
(C) India does not follow any colonial practices
(D) India has helped other countries gain freedom

[GATE 2014 : IIT Kharagpur (CSE Set - 2, EE Set - 2)]

Q.54 Few school curricula include a unit on how to deal with bereavement and grief, and yet all students at some point in their lives suffer from losses through death and parting.

Based on the above passage which topic would not be included in a unit on bereavement?

(A) How to write a letter of condolence
(B) What emotional stages are passed through in the healing process
(C) What the leading causes of death are
(D) How to give support to a grieving friend

Choose the most appropriate word from the options given below to complete the following sentence:

[GATE 2011 : IIT Madras (CSE, ME, CE)]

Q.55 One of the legacies of the Roman legions was discipline. IN the legions, military law prevailed and discipline was brutal. Discipline on the battlefield kept units obedient, intact and fighting, even when the odds and conditions were against them.

Which one of the following statements best sums up the meaning of the above passage?

(A) Thorough regimentation was the main reason for the efficiency of the Roman legions even in adverse circumstances.
(B) The legions were treated inhumanly as if the men were animals.
(C) Discipline was the armies inheritance from their seniors.
(D) The harsh discipline to which the legions were, subjected to led to the odds and conditions being against them.

[GATE 2012 : IIT Delhi (EC, EE, IN)]

Q.56 The horse has played a little known but very important role in the field of medicine. Horses were injected with toxins of diseases until their blood built up immunities. Then a serum was made from their blood. Serums to fight with diphtheria and tetanus were developed this way. It can be inferred from the passage that horses were

(A) Given immunity to diseases
(B) Generally quite immune to diseases
(C) Given medicines to fight toxins
(D) Given diphtheria and tetanus serums

[GATE 2011 : IIT Madras (EC, EE)]

Q.57 Moving into a world of big data will require us to change our thinking about the merits of exactitude. To apply the conventional mindset of measurement to the digital, connected world of the twenty-first century is to miss a crucial point. As mentioned earlier, the obsession with exactness is an artefact of the information-deprived analog era. When data was sparse, every data point was critical, and thus great care was taken to avoid letting any point bias the analysis. From "BIG DATA" Viktor Mayer-Schonberger and Kenneth Cukier

The main point of the paragraph is:

(A) The twenty-first century is a digital world

(B) Big data is obsessed with exactness

(C) Exactitude is not critical in dealing with big data

(D) Sparse data leads to a bias in the analysis

[GATE 2014 : IIT Kharagpur (CE Set - 2, IN)]

Q.58 The Palghat Gap (or Palakkad Gap), a region about 30 km wide in the southern part of the Western Ghats in India, is lower than the hilly terrain to its north and south. The exact reasons for the formation of this gap are not clear. It result in the neighboring regions of Tamil Nadu getting more rainfall from the South West monsoon and the neighboring regions of Kerala having higher summer temperatures. What can be inferred from this passage?

(A) The Palghat gap is caused by high rainfall and high temperatures in southern Tamil Nadu and Kerala

(B) The regions in Tamil Nadu and Kerala that are near the Palghat Gap are low lying

(C) The low terrain of the Palghat Gap has a significant impact on weather patterns in neighbouring parts of Tamil Nadu and Kerala

(D) Higher summer temperatures result in higher rainfall near the Palghat Gap area

[GATE 2014 : IIT Kharagpur (CSE Set - 1, EE Set - 1)]

Q.59 Statement: There were different streams of freedom movements in colonial India carried out by the moderates, liberals, radicals, socialists, and so on.

Which one of the following is the best inference from the above statement?

(A) The emergence of nationalism in colonial India led to our Independence

(B) Nationalism in India emerged in the context of colonialism

(C) Nationalism in India is homogeneous

(D) Nationalism in India is heterogeneous

[GATE 2013 : IIT Bombay (EC, EE, IN)]

Q.60 The old city of Koenigsberg, which had a German majority population before World War 2,is now called Kaliningrad. After the events of the war, Kaliningrad is now a Russian territory and has a predominantly Russian population. It is bordered by the Baltic Sea on the north and the countries of Poland to the south and west and Lithuania to the east respectively. Which of the statements below can be inferred from this passage?

(A) Kaliningrad was historically Russian in its ethnic make up

(B) Kaliningrad is a part of Russia despite it not being contiguous with the rest of Russia

(C) Koenigsberg was renamed Kaliningrad, as that was its original Russian name

(D) Poland and Lithuania are on the route from Kaliningrad to the rest of Russia

[GATE 2014 : IIT Kharagpur (CSE Set - 2, EE Set - 2)]

Q.61 Tanya is older than Eric. Cliff is older than Tanya. Eric is older than Cliff. If the first two statements are true, then the third statement is:

(A) True (B) False

(C) Uncertain (D) Data insufficient

[GATE 2015 : IIT Kanpur (ME Set - 3, IN)]

Q.62 Where the film Bombay loses out is where every commercial film congenitally goes awry - becoming too simplistic to address serious issues and failing to translate real life to reel.

Which of the following can be inferred from the above line?

(A) The film's director aimed at recreating real life on the silver screen.

(B) The film was too simplistic for the audience's taste.

(C) The film was successful in spite of its shortcomings.

(D) None of these

Q.63 Bhaichung was observing the pattern of people entering and leaving a car service centre. There was a single window where customers were being served.

He saw that people inevitable came out of the centre in the order that they went in. however, the time they spent inside seemed to vary a lot : some people came out in a matter of minutes while for others in took much longer.

From this, what can one conclude?

(A) The centre operates on a first-come-first-served basis, but with variable service times, depending on specific customer needs.

(B) Customers were served in an arbitrary order, since they tool varying amounts of time for service completion in the centre.

(C) Since some people came out within a few minutes of entering the centre, the system is likely to operate on a last-come0first-served basis.

(D) Entering the centre early ensured that one would have shorter service times and most people attempted to do this.

[GATE 2017 : IIT Roorkee (IN, CE Set – 2)]

Q.64 Rajan was not happy that Sajan decided to do the project on his own. On observing his unhappiness, Sajan explained to Rajan that he preferred to work independently.

Which one of the statements below is logically valid and can be inferred from the above sentences?

(A) Rajan has decided to work only in a group.

(B) Rajan and Sajan were formed into a group against their wishes.

(C) Sajan had decided to give in to Rajan's request to work with him.

(D) Rajan had believed that Sajan and he would be working together.

[GATE 2014 : IIT Kharagpur (CE Set - 1)]

Q.65 Lamenting the gradual sidelining of the arts ill school curricula, a group of prominent artists wrote to the Chief Minister last year, asking him to allocate more funds to support arts education in schools. However, no such increase has been announced in this year's Budget. The artists expressed their deep anguish at their request not being approved, but many of them remain optimistic about funding in the future. Which of the staternent(s) below is/are logically valid and can be inferred from the above statements?

(i) The artists expected funding for the arts to increase this year

(ii) The Chief Minister was receptive to the idea of increasing funding for the arts

(iii) The Chief Minister is a prominent artist

(iv) Schools are giving less importance to arts education nowadays

(A) (iii) and (iv) (B) (i) and (iv)

(C) (i), (ii) and (iv) (D) (i) and (iii)

[GATE 2015 : IIT Kanpur (EC Set - 2, ME Set 1)]

Q.66 The number of people diagnosed with dengue fever (contracted from the bite of a mosquito) in north India is twice the number diagnosed last year. Municipal authorities have concluded that measures to control the mosquito population have failed in this region.

Which one of the following statements, if true, does not contradict this conclusion?

(A) A high proportion of the affected population has returned from neighboring countries where dengue is prevalent

(B) More cases of dengue are now reported because of an increase in the Municipal Office's administrative efficiency

(C) Many more cases of dengue are being diagnosed this year since the introduction of a new and effective diagnostic test

(D) The number of people with malarial fever (also contracted from mosquito bites) has increased this year

[GATE 2014 : IIT Kharagpur (CSE Set - 2, EE Set - 2)]

Q.67 A poll of students appearing for masters in engineering indicated that 60% of the students believed that mechanical engineering is a profession unsuitable for women. A research study on women with masters or higher degrees in mechanical engineering found that 99% of such women were successful in their professions.

Which of the following can be logically inferred from the above paragraph?

(A) Many students have misconceptions regarding various engineering disciplines.

(B) Men with advanced degrees in mechanical engineering believe women are well suited to be mechanical engineers.

(C) Mechanical engineering is a profession well suited for women with masters or higher degrees in mechanical engineering.

(D) The number of women pursing higher degrees in mechanical engineering is small.

[GATE 2016 : IISc Bangalore (EE Set - 2)]

Q.68 Humpty Dumpty sits on a wall every day while having lunch. The wall sometimes breaks. A person sitting on the wall falls if the wall breaks.

Which one of the statement below is logically valid and can be inferred from the above sentences?

(A) Humpty Dumpty always falls white having lunch

(B) Humpty Dumpty does not fall sometimes while having lunch

(C) Humpty Dumpty never falls during dinner

(D) When Humpty Dumpty does not sit on the wall, the wall does not break

[GATE 2015 : IIT Kanpur (EC Set - 1)

Q.69 "If you are looking for a history of India, or for an account of the rise and fall of the British Raj, or for the reason of the cleaving of the subcontinent into two mutually antagonistic parts and the effects this mutilation will have in the respective sections, and ultimately on Asia, you will not find it in these pages for though I have spent a lifetime in the country, I lived too near the seat of events, and was too intimately associated

Which of the following statement best reflects the author's opinion?

(A) An intimate association does not allow for the necessary perspective.

(B) Matters are recorded with an impartial perspective.

(C) An intimate association offers an impartial perspective.

(D) Actors are typically associated with the impartial recording of matters.

[GATE 2017 : IIT Roorkee (EC Set – 2)]

Q.70 "The hold of the nationalist imagination on our colonial past is such that anything inadequately or improperly nationalist is just not history".

Which of the following statements best reflects the author's opinion?

(A) Nationalist are highly imaginative.

(B) History is viewed through the filter of nationalism.

(C) Our colonial past never happened.

(D) Nationalism has to be adequately and properly imagined.

[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]

Q.71 Today we consider, Ashoka as a great ruler because of the copious evidence he left behind in the form of stone carved edicts. Historians tend to correlate greatness of a king at his time with the availability of evidence today.

Which of the following can be logically inferred from the above sentences?

(A) Emperors who do not leave significant sculpted evidence are completely forgotten.

(B) Ashoka produced stone-carved edicts to ensure that later historians will respect him.

(C) Statues of kings are a reminder of their greatness.

(D) A king's greatness, as we know him today, is interpreted by historians.

[GATE 2016 : IISc Bangalore (CE Set - 2)]

Q.72 Most experts feel that in spite of possessing all the technical skills required to be a batsman of the highest order, he is unlikely to be so due to lack of requisite temperament. He was guilty of throwing away his wicket several times after working hard to lay a strong foundation. His critics pointed out that until he addressed this problem success at the highest level will continue to elude him.

Which of the statement (s) below is/are logically valid and can be inferred from the above passage?

(i) He was already a successful batsman at the highest level

(ii) He has to improve his temperament in order to become a great batsman

(iii) He failed to make many of his good starts count

(iv) Improving his technical skills will guarantee success

(A) (iii) and (iv) (B) (ii) and (iii)

(C) (i), (ii) and (iii) (D) (ii) only

[GATE 2015 : IIT Kanpur

(CE Set - 1, CSE Set - 3)]

Q.73 By the beginning of the 20th century, several hypotheses were being proposed, suggesting a paradigm shift in our understanding of the universe. However, the clinching evidence was provided by experimental measurements of the position of a star which was directly behind our sun.

Which of the following inference(s) may be drawn from the above passage?

(i) Our understanding of the universe changes based on the positions of stars

(ii) Paradigm shifts usually occur at the beginning of centuries

(iii) Stars are important objects in the universe

(iv) Experimental evidence was important in confirming this paradigm shift

(A) (i), (ii) and (iv) (B) (iii) only

(C) (i) and (iv) (D) (iv) only

[GATE 2014 : IIT Kharagpur

(CSE Set - 3, EE Set - 3)]

Q.74 For submitting tax returns, all resident males with annual income below Rs 10 lakh should fill up Form P and all resident females with income below Rs 8 lakh should fill up Form All people with incomes above Rs 10 lakh should fill up Form R, except non residents with income above Rs 15 lakhs, who should fill up Form S. All others should fill Form T. An example of a person who should fill Form T is

(A) A resident male with annual income Rs 9 lakh

(B) A resident female with annual income Rs 9 lakh

(C) A non-resident male with annual income Rs 16 lakh

(D) A non-resident female with annual income Rs 16 lakh

[GATE 2014 : IIT Kharagpur

(ME Set – 1, EC Set - 1)]

Q.75 A smart city integrates all modes of transport, uses clean energy and promotes sustainable use of resources. It also uses technology to ensure safety and security of the city, something which critics argue, will lead to a surveillance state.

Which of the following can be logically inferred from the above paragraph?

(i) All smart cities encourage the formation of surveillance states.

(ii) Surveillance is an integral part of a smart city.

(iii) Sustainability and surveillance go hand in hand in a smart city.

(iv) There is a perception that smart cities promote surveillance.

(A) (i) and (iv) only (B) (ii) and (iii) only

(C) (iv) only (D) (i) only

[GATE 2016 : IISc Bangalore (ME Set - 2)]

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A Answer Keys

Verbal Reasoning									
1.	D	2.	D	3.	B	4.	C	5.	D
6.	D	7.	D	8.	D	9.	D	10.	D
11.	B	12.	D	13.	A	14.	D	15.	D
16.	B	17.	D	18.	D	19.	B	20.	D
21.	D	22.	A	23.	D	24.	B	25.	A
26.	C	27.	A	28.	D	29.	D	30.	C
31.	D	32.	B	33.	A	34.	D	35.	C
36.	C	37.	B	38.	B	39.	B	40.	D
41.	D	42.	B	43.	B	44.	B	45.	A
46.	C	47.	D	48.	A	49.	D	50.	A
51.	A	52.	B	53.	A	54.	C	55.	A
56.	B	57.	C	58.	C	59.	D	60.	D
61.	B	62.	D	63.	A	64.	D	65.	B
66.	D	67.	C	68.	B	69.	C	70.	B
71.	D	72.	B	73.	D	74.	B	75.	C

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7 VERBAL ABILITY & VERBAL GRAMMAR (VA VG)

7.1 VAVG

Q.1 Find the odd one in the following group of words.

mock, deride, praise, jeer

(A) mock (B) deride

(C) praise (D) jeer

[GATE 2016 : IISc Bangalore (EE Set - 1, CSE Set - 2)]

Q.2 Which of the following options is closest in meaning to the word given below

Nadir

(A) Highest (B) Lowest

(C) Medium (D) Integration

[GATE 2013 : IIT Bombay (CSE, ME)]

Q.3 Which of the following options is closest in meaning to the word Circuitous.

(A) Cyclic (B) Indirect

(C) Confusing (D) Crooked

[GATE 2010 : IIT Guwahati (EC, EE, ME, IN, CE, CSE)]

Q.4 Which of the following options is the closest in the meaning to the word below :

Inexplicable

(A) Incomprehensible (B) Indelible

(C) Inextricable (D) Infallible

[GATE 2011 : IIT Madras (CSE, ME, CE)]

Q.5 There was no doubt that their work was thorough.

Which of the words below is closest in meaning to the underlined word above?

(A) Pretty (B) Complete

(C) Sloppy (D) Haphazard

[GATE 2017 : IIT Roorkee (IN, CE Set - 2)]

Q.6 Which one of the following options is the closest in meaning to the word given below?

Mitigate

(A) Diminish (B) Divulge

(C) Dedicate (D) Denote

[GATE 2012 : IIT Delhi (BT, ME, CE)]

Q.7 The word similar in meaning to 'dreary' is

(A) Cheerful (B) Dreamy

(C) Hard (D) Dismal

[GATE 2015 : IIT Kanpur (CE Set - 2)]

Q.8 The value of one U.S. dollar is 65 Indian Rupees today, compared to 60 last year. The Indian Rupee has _____.

(A) Depressed (B) Depreciated

(C) Appreciated (D) Stabilized

[GATE 2014 : IIT Kharagpur (EC Set - 3, ME Set - 3)]

Q.9 Choose the most appropriate word from the options given below to the complete the following sentence:

His rather casual remarks on politics _____ his lack of seriousness about the subject.

(A) Masked (B) Belied

(C) Betrayed (D) Suppressed

[GATE 2010 : IIT Guwahati (CSE, EE, ME, CE, EC, IN)]

Q.10 Choose the most appropriate word(s) from the options given below to complete the following sentence.

I contemplated _____ Singapore for my vacation but decided against it.

(A) To visit (B) Having To Visit

(C) Visiting (D) For A Visit

[GATE 2011 : IIT Madras (CSE, ME, CE)]

Q.11 '**Advice**' is _____.

(A) A verb

(B) A noun

(C) An adjective

(D) Both a verb and a noun

[GATE 2014 : IIT Kharagpur (EC Set - 3, ME Set - 3)]

Q.12 Complete the sentence

Dare _____ mistakes

(A) Commit (B) To commit

(C) Committed (D) Committing

[GATE 2013 : IIT Bombay (EC, EE, IN)]

Q.13 Choose the appropriate word/phrase, out of the four options given below, to complete the following sentence:

Frogs _____.

(A) Croak (B) Roar

(C) Hiss (D) Patter

[GATE 2015 : IIT Kanpur (EC Set - 1)]

Q.14 Research in the workplace reveals that people work for many reasons _____.

(A) Money beside (B) Beside money

(C) Money besides (D) Besides money

[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]

Q.15 Choose the most appropriate pair of words from the options given below to complete the following sentence.

She could not _____ the thought of _____ the election to her bitter rival.

(A) Bear, loosing (B) Bare, loosing

(C) Bear, losing (D) Bare, losing

[GATE 2014 : IIT Kharagpur (EC Set - 2, ME Set - 2)]

Q.16 Choose the most appropriate word from the options given below to complete the following sentence the official answered _____ that the complaints of the citizen would be looked into.

(A) Respectably (B) Respectfully

(C) Reputably (D) Respectively

[GATE 2015 : IIT Kanpur (CE Set - 2)]

Q.17 The driver applied the _____ as soon as she approached the hotel where she wanted to take a_____?

(A) Brake, Break (B) Break, Break

(C) Brake, Brake (D) Break, Brake

[GATE 2018 : IIT Guwahati (CE Set – 1)]

Q.18 Choose the statement(s) where the underlined word is used correctly :

(i) A <u>prone</u> is a dried plum.

(ii) He was lying <u>prone</u> on the floor.

(iii) People who eat a lot of fat are <u>prone</u> to heart disease.

(A) (i) and (ii) only

(B) (iii) only

(C) (i) and (ii) only

(D) (ii) and (iii) only

[GATE 2016 : IISc Bangalore (ME Set - 2)]

Q.19 "Although it does contain some pioneering ideas, one would hardly characterize the work as _____."

The word that best fills the blank in the above sentence is

(A) Innovative (B) Simple

(C) Dull (D) Boring

[GATE 2018 : IIT Guwahati (CE Set – 2)]

Q.20 "By giving him the last _____ of the cake, you will ensure lasting _____ in our house today."

The words that best fill the blanks in the above sentence are

(A) peas, piece (B) piece, peace

(C) peace , pieces (D) peace, peas

[GATE 2018 : IIT Guwahati (EC Set – 1)]

Q.21 Choose the statement where underlined word is used correctly.

(A) The industrialist load a <u>personnel</u> jet.

(B) I write my experience in my <u>personnel</u> diary.

(C) All <u>personnel</u> are being given the day off.

(D) Being religious is a <u>personnel</u> aspect.

[GATE 2015 : IIT Kanpur (CSE Set - 1, EE Set - 1)]

Q.22 "His face _____ with joy when the solution of the puzzle was _____ to him."

The words that best fill the blanks in the above sentence are

(A) Shone, shown (B) Shone, shone

(C) Shown, shone (D) Shown, shown

[GATE 2018 : IIT Guwahati (CE Set – 2)]

Q.23 Choose the most appropriate word from the options given below to complete the following sentence:

If we manage to _____ our natural resources, we would leave a better planet for our children.

(A) Uphold (B) Restrain
(C) Cherish (D) Conserve

[GATE 2010 : IIT Guwahati (CSE, ME, EE, EC, CE)]

Q.24 Choose the most appropriate word from the options given below to complete the following sentence: **Under ethical guidelines recently adopted by the Indian Medical Association, human genes are to be manipulated only to correct diseases for which_____ treatments are unsatisfactory.**

(A) Similar (B) Most
(C) Uncommon (D) Available

[GATE 2011 : IIT Madras (EC, EE)]

Q.25 "When she fell down the _____, she received many _____ but little help." The words that best fill the blanks in the above sentence are

(A) stairs, stares (B) stairs, stairs
(C) stares, stairs (D) stares, stares

[GATE 2018 : IIT Guwahati (IN Set – 1)]

Q.26 "In spite of being warned repeatedly, he failed to correct his _____ behaviour."

The word that best fills the blank in the above sentence is

(A) rational (B) reasonable
(C) errant (D) good

[GATE 2018 : IIT Guwahati (IN Set – 1)]

Q.27 The question below consists of a pair of related words followed by four pairs of words.

Select the pair that best expresses the relation in the original pair :

Gladiator : Arena

(A) Dancer : Stage
(B) Commuter: Train
(C) Teacher : Classroom
(D) Lawyer : Courtroom

[GATE 2011 : IIT Madras (EC, EE)]

Q.28 The pair that best express a relationship similar to that expression in the pair:

Medicine: Health

(A) Science: Experiment
(B) Wealth : Peace
(C) Education: Knowledge
(D) Money: Happiness

[GATE 2013 : IIT Bombay (CE)]

Q.29 Select the pair that best expresses a relationship similar to that expressed in the pair:

Children: Pediatrician

(A) Adult: Orthopaedist
(B) Females: Gynaecologist
(C) Kidney: Nephrologist
(D) Skin: Dermatologist

[GATE 2015 : IIT Kanpur (CE Set - 1, CSE Set- 3)]

Q.30 It was her view that the country's problems had been_____ by foreign technocrats, so that to invite them to come back would be counter-productive.

(A) Identified (B) Ascertained
(C) Exacerbated (D) Analysed

[GATE 2011 : IIT Madras (EC, EE)]

Q.31 Choose the correct verb to fill in the blank below:

Let us _____.

(A) Introvert (B) Alternate
(C) Atheist (D) Altruist

[GATE 2015 : IIT Kanpur (EC Set – 3, ME Set - 2)]

Q.32 Choose the appropriate word/phrase, out of the four options given below, to complete the following sentence:

Apparent lifelessness _____ dormant life.

(A) Harbours (B) Leads to
(C) Supports (D) Affects

[GATE 2015 : IIT Kanpur (ME Set – 3, IN)]

Q.33 Choose the most appropriate alternative from the options given below to complete the following sentence:

Despite several _____ the mission succeeded in its attempt to resolve the conflict.

(A) Attempts (B) Setbacks
(C) Meetings (D) Delegations

[GATE 2012 : IIT Delhi (CSE, ME, CE)]

Q.34 Choose the most appropriate word from the options given below to complete the following sentence.

He could not understand the judges awarding her the first prize, because he thought that her performance was quite _____.

(A) Superb (B) Medium

(C) Mediocre (D) Exhilarating

[GATE 2014 : IIT Kharagpur (CSE Set - 1, EE Set - 1)]

Q. 35 The chairman requested the aggrieved shareholders to _____him.

(A) bare with (B) bore with

(C) bear with (D) bare

[GATE 2016 : IISc Bangalore (EE Set - 2)]

Q.36 The students _____ the teacher on teachers' day for twenty years of dedicated teaching.

(A) facilitated (B) felicitated

(C) fantasized (D) facilitated

[GATE 2016 : IISc Bangalore (EC Set – 2, ME Set - 3)]

Q. 37 The dress _____ her so well that they all immediately_____ her for appearance.

The words that best fill blank in the above are

(A) complemented, complemented

(B) complimented, complemented

(C) complimented, complimented

(D) complemented, complimented

[GATE 2018 : IIT Guwahati (ME Set – 2)]

Q.38 Choose the statement where underlined word is used correctly

(A) The minister <u>insured</u> the victims that everything would be all right.

(B) He <u>ensured</u> that the company will not have to bear any loss.

(C) The actor got himself <u>ensured</u> against any accident.

(D) The teacher <u>insured</u> students of good results

[GATE 2015 : IIT Kanpur (CE Set - 2)]

Q.39 "The judge's standing in the legal community, through shaken by false allegations of wrongdoing, remained_____."

The word that best fills the blank in the above sentence is

(A) Undiminished (B) Damaged

(C) Illegal (D) Uncertain

[GATE 2018 : IIT Guwahati (ME Set – 2)]

Q. 40 "It is no surprise that every society has had codes of behaviour; however the nature of these codes is often _____."

The word that best fills the blank in the above sentence is

(A) Unpredictable (B) Simple

(C) Expected (D) Strict

[GATE 2018 : IIT Guwahati (CE Set – 1)]

Q.41 Which one of the following option is the closest in meaning to the word given below

Latitude

(A) Eligibility (B) Freedom

(C) Coercion (D) Meticulousness

[GATE 2012 : IIT Delhi (EC, EE, IN)]

Q.42 Which of the following options is closest in meaning to the word given below?

"Primeval"

(A) Modern (B) Historic

(C) Primitive (D) Antique

[GATE 2013 : IIT Bombay (CE)]

Q.43 Complete the sentence:

Universalism is to particularism as diffuseness is to _____

(A) Specificity (B) Neutrality

(C) Generality (D) Adaptation

[GATE 2013 : IIT Bombay (CSE, ME)]

Q.44 Choose the most appropriate alternative from the options given below to complete the following sentence

If the tired soldier wanted to lie down, he_____ the mattress out on the balcony

(A) Should take

(B) Shall take

(C) Should have taken

(D) Will have taken

[GATE 2012 : IIT Delhi (EC, EE, IN)]

Q.45 Choose the most appropriate word from the option given below to complete the following sentence

Given the seriousness of the situation that he had to face, his _____ was impressive

(A) Beggary (B) Nomenclature
(C) Jealousy (D) Nonchalance

[GATE 2012 : IIT Delhi (EC, EE, IN)]

Q.46 Which of the following options is the closest in meaning to the phrase underlined in the sentence below?

It is fascinating to see life forms **cope with** varied environmental conditions.

(A) Adopt to (B) Adapt to
(C) Adept in (D) Accept with

[GATE 2014 : IIT Kharagpur (CSE Set -1, EE Set-1)]

Q.47 Choose he word most similar in meaning to the given word: Awkward

(A) Inept (B) Graceful
(C) Suitable (D) Dreadful

[GATE 2015 : IIT Kanpur (EC Set - 2, ME Set-1)]

Q.48 Choose the most appropriate alternative from the options given below to complete the following sentence:

Suresh's dog is the one _____ was hurt in the stampede.

(A) That (B) Which
(C) Who (D) Whom

[GATE 2012 : IIT Delhi (ME)]

Q.49 Choose the most appropriate word from the options given below to complete the following sentence._____ is the key to their happiness; they are satisfied with what they have.

(A) Contentment (B) Ambition
(C) Perseverance (D) Hunger

[GATE 2014 : IIT Kharagpur (CE Set - 2, IN)]

Q.50 While receiving the award, the scientist said, "I feel vindicated". Which of the following is closest in meaning to the word 'vindicated'?

(A) Punished (B) Substantiated
(C) Appreciated (D) Chastened

[GATE 2014 : IIT Kharagpur (EC Set -4, ME Set-4)]

Q.51 Choose the word that is opposite in meaning to the word "coherent".

(A) Sticky (B) Well-connected
(C) Rambling (D) Friendly

[GATE 2014 : IIT Kharagpur (EE)] (CSE Set -3, EE Set-3)]

Q.52 Which word is not a synonym for the word vernacular?

(A) Regional (B) Indigeneous
(C) Indigent (D) Colloquial

[GATE 2015 : IIT Kanpur (CE Set- 2)]

Q.53 Friendship, No matter how _____ it is, has its limitation

(A) Cordial (B) Intimate
(C) Secret (D) Pleasant

[GATE 2013 : IIT Bombay (CE)]

Q.54 He **turned a deaf ear to** my request.

What does the underlined phrasal verb mean?

(A) Ignored (B) Appreciated
(C) Twisted (D) Returned

[GATE 2016 : IISc Bangalore (CE Set-2)]

Q.55 The Buddha said, "Holding on to anger is like grasping a hot coal with the intent of throwing it at someone else; you are the one who gets burnt."

Select the word below which is closest in meaning to the word underlined above.

(A) Burning (B) Igniting
(C) Clutching (D) Flinging

[GATE 2016 : IISc Bangalore (EC Set – 3, IN)]

Q.56 Complete the sentence

Dare _____ mistakes

(A) Commit (B) To commit
(C) Committed (D) Committing

[GATE 2013 : IIT Bombay (EC, EE, IN)]

Q.57 Choose the option with words that are not synonyms.

(A) Aversion, dislike
(B) Luminous, radiant
(C) Plunder, loot
(D) Yielding, resistant

[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]

Q.58 Choose the most appropriate word from the options given below to complete the following sentence.

A person suffering from Alzheimer's disease _____ short-term memory loss.

(A) Experienced (B) Unexperienced
(C) Is experiencing (D) Experiences

[GATE 2014 : IIT Kharagpur (CE Set - 2 IN)]

Q.59 Choose the most appropriate word from the options given below to complete the following sentence.

One of his biggest _____ was his ability to forgive.

(A) Vice (B) Virtues

(C) Choices (D) Strength

[GATE 2014 : IIT Kharagpur (CE Set - 1)]

Q.60 Which of the options given below best completes the following sentence?

She will feel much better if she _____.

(A) Will get some rest

(B) Gets some rest

(C) Will be getting some rest

(D) Is getting some rest

[GATE 2014 : IIT Kharagpur (EC Set - 2, ME Set - 2)]

Q.61 In a press meet on the recent scam, the minister said, "The buck stops here". What did the minister convey by the statement?

(A) He wants all the money

(B) He will return the money

(C) He will assume final responsibility

(D) He will resist all enquiries

[GATE 2014 : IIT Kharagpur (CSE Set - 1, EE Set - 1)]

Q.62 The Tamil version of _____ John Abraham-starrer Madras Café _____ cleared by the censor board with no cuts last week, but the film's distributors _____ no takers among the exhibitors for a release in Tamil Nadu _____ this Friday.

(A) Mr., was, found, on

(B) A, was found, at

(C) The, was, found, on

(D) A, being, find, at

[GATE 2015 : IIT Kanpur (CE Set – 1, CSE Set - 3)]

Q.63 Choose the most appropriate word from the options given below to complete the following sentence.

Communication and interpersonal skills are_____ important in their own ways.

(A) Each (B) Both

(C) All (D) Either

[GATE 2014 : IIT Kharagpur (EC Set - 2, ME Set - 2)]

Q. 64 The man who is now Municipal Commissioner worked as _____.

(A) the security guard at a university

(B) a security guard at the university

(C) a security guard at university

(D) the security guard at the university

[GATE 2016 : IISc Bangalore (EE Set – 1, CSE Set - 2)]

Q.65 After the discussion, Tom said to me, 'Please revert!' He expects me to _____.

(A) Retract (B) Get back to him

(C) Move in reverse (D) Retreat

[GATE 2014 : IIT Kharagpur (EC Set - 4, ME Set - 4)]

Q.66 Out of the following four sentences, select the most suitable sentence with respect to grammar and usage.

(A) Since the report lacked needed information, it was of no use to them.

(B) The report was useless to them because there were no needed information in it.

(C) Since the report did not contain the needed information, it was not real useful to them

(D) Since the report lacked needed information, it would not had been useful to them.

[GATE 2015 : IIT Kanpur (CSE Set - 2, EE Set - 2)]

Q.67 Choose the appropriate word–phrase out of the four options given below, to complete the following sentence

Dhoni, as well as the other team members of Indian team _____ present on the occasion

(A) Were (B) Was

(C) Has (D) Have

[GATE 2015 : IIT Kanpur (EC Set – 2, ME Set - 1)]

Q.68 Choose the most appropriate set of words from the options given below to complete the following sentence.

_____ is a will, _____ is a way.

(A) Wear, there, their

(B) Were, their, there

(C) Where, there, there

(D) Where, their, their

[GATE 2016 : IISc Bangalore (CE Set - 2)]

Q.69 Fill in the blank with the correct idiom/phrase.
That boy from the town was a _____ in the sleepy village.
(A) Dog out of herd
(B) Sheep from the heap
(C) Fish out of water
(D) Bird from the flock
[GATE 2015 : IIT Kanpur (ME Set – 3, IN)]

Q.70 The volume of a sphere of diameter 1 unit is _____ than the volume of a cube of side 1 unit.
(A) Least (B) Less
(C) Lesser (D) Low
[GATE 2016 : IISc Bangalore (ME Set - 2)]

Q.71 If I were you, I _____ that laptop. It's much too expensive.
(A) Won't buy (B) Shan't buy
(C) Wouldn't buy (D) Would buy
[GATE 2016 : IISc Bangalore (CE Set - 2)]

Q.72 Despite the new medicine's _____ in treating diabetes, it is not _____ widely.
(A) Effectiveness-prescribed
(B) Availability-used
(C) Prescription-available
(D) Acceptance-proscribed
[GATE 2016 : IISc Bangalore (EC Set - 1)]

Q.73 The policeman asked the victim of a theft, "What did you _____ ?
(A) Loose (B) Lose
(C) Loss (D) Louse
[GATE 2016 : IISc Bangalore (EC Set - 1)]

Q.74 The ninth and the tenth of this month are Monday and Tuesday _____.
(A) Figuratively (B) Retrospectively
(C) Respectively (D) Rightfully
[GATE 2017 : IIT Roorkee (EC Set – 2)]

Q.75 After Rajendra Chola returned from his voyage to Indonesia, he _____ to visit the temple in Thanjavur.
(A) was wishing (B) is wishing
(C) wished (D) had wished
[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]

Q.76 She has a sharp tongue and it can occasionally turn _____
(A) hurtful (B) left
(C) methodical (D) vital
[GATE 2017 : IIT Roorkee (EC, BT, PI Set – 1)]

Q.77 It is ____ to read this year's textbook _____ the last year's.
(A) easier, than (B) most easy, than
(C) easier, from (D) easiest, from
[GATE 2017 : IIT Roorkee (EC Set – 2)]

Q.78 If she _____ how to calibrate the instrument, she _____ done the experiment.
(A) Knows, will have
(B) Knew, had
(C) Had known, could have
(D) Should have known, would have
[GATE 2014 : IIT Kharagpur (CSE Set -3, EE Set - 3)]

Q.79 "India is a country of rich heritage and cultural diversity".
Which one of the following facts best supports the claim made in the above sentence?
(A) India is a union of 28 states and 7 union territories.
(B) India has a population of over 11 billion.
(C) India is home to 22 official languages and thousands of dialects.
(D) The Indian cricket team draws players from over ten states.
[GATE 2014 : IIT Kharagpur (EC Set – 3, ME Set - 3)]

Q.80 He was one of my best _____and I felt his loss _____.
(A) Friend, keenly (B) Friends, keen
(C) Friend, keener (D) Friends, keenly
[GATE 2017 : IIT Roorkee (ME Set – 1)]

Q.81 Saturn is _____ to be seen on a clear night with the naked eye.
(A) Enough bright (B) Bright enough
(C) As enough bright (D) Bright as enough
[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]

Q.82 "Even though there is a vast scope for its _____, tourism has remained a/an _____ area."
The words that best fill the blanks in the above sentence are
(A) Improvement, neglected
(B) Rejection, approved
(C) Fame, glum
(D) Interest, disinterested
[GATE 2018 : IIT Guwahati (EC Set – 1)]

Q.83 The ways in which this game can be played _____ potentially infinite.

(A) Is (B) Is being

(C) are (D) are being

[GATE 2017 : IIT Roorkee (ME Set – 2)]

Q.84 The event would have been successful if you _____ able to come.

(A) are (B) had been

(C) have been (D) would have been

[GATE 2017 : IIT Roorkee (IN, CE Set – 2)]

Q.85 Choose the grammatically CORRECT sentence

(A) Two and two add four

(B) Two and two become four

(C) Two and two are four

(D) Two and two make four

[GATE 2013 : IIT Bombay (EC, EE, IN)]

Q.86 The bacteria in milk are destroyed when it _____ heated to 80 degree Celsius.

(A) would be (B) will be

(C) is (D) was

[GATE 2017 : IIT Roorkee (CE, CH Set – 1)]

Q.87 If you choose plan *P*, you will have to _____plan *Q*, as these two are mutually_____.

(A) Forgo, exclusive (B) Forget, inclusive

(C) Accept, exhaustive (D)Adopt, intrusive

[GATE 2017 : IIT Roorkee (ME Set – 2)]

Q.88 Which of the following options is the closest in meaning to the sentence below?

"As a woman, I have no country."

(A) Women have no country

(B) Women are not citizens of any country.

(C) Women's solidarity knows no national boundaries

(D) Women of all countries have equal legal rights.

[GATE 2014 : IIT Kharagpur (CE Set – 2, IN)]

Q.89 What is the adverb for the given word below?

Misogynous

(A) Misogynousness (B) Misogynity

(C) Misogynously (D)Misogynous

[GATE 2015 : IIT Kanpur (EC Set - 2, ME Set - 1)]

Q.90 We _____ our friend‟s birthday and we _____ how to make it up to him.

(A) Completely forgot - - - don‟t just know

(B) Forgot completely - - - don‟t just know

(C) Completely forgot - - - just don‟t know

(D) Forgot completely - - - just don‟t know

[GATE 2015 : IIT Kanpur (CSE Set - 2, EE Set - 2)]

Q.91 Choose the most appropriate word from the options given below to complete the following sentence?

If the athlete had wanted to come first in the race, he _____several hours every day.

(A) Should practice

(B) Should have practised

(C) Practised

(D) Should be practicing

[GATE 2015 : IIT Kanpur (EC Set - 3, ME Set - 2)]

Q.92 Identify the correct spelling out of the given options :

(A) Manageable (B) Manageble

(C) Mangaeble (D) Managible

[GATE 2016 : IISc Bangalore (EE Set - 2)]

Q.93 _____ with someone else's email account is now a very serious offence.

(A) Involving (B) Assisting

(C) Tampering (D) Incubating

[GATE 2017 : IIT Roorkee (CE, CH Set – 1)]

Q.94 "Since you have gone off the _____ the _____ sand is likely to damage the car". The words that best fill the blanks in the above sentence are

(A) course, coarse (B) course, course

(C) coarse, course (D) coarse, coarse

[GATE 2018 : IIT Guwahati (EE Set – 1)]

Q.95 Which of the following options is the closest in meaning to the sentence below?

She enjoyed herself immensely at the party.

(A) She had a terrible time at the party.

(B) She had a horrible time at the party.

(C) She had a terrific time at the party

(D) She had a terrifying time at the party

[GATE 2015 : IIT Kanpur (CSE Set - 1, EE Set - 1)]

Q.96 Select the alternative meaning of the underlined part of the sentence. The chain snatchers **took to their heels** when the police party arrived.

(A) Took shelter in a thick jungle
(B) Open indiscriminate fire
(C) Took to flight
(D) Unconditionally surrendered

[GATE 2015 : IIT Kanpur (EE Set - 1, CSE Set - 1)]

Q.97 After India's cricket world cup victory in 1985, Shrotria who was playing both tennis and cricket till then, decided to concentrate only on cricket. And the rest is history.

What does the underlined phrase mean in this context?

(A) history will rest in peace
(B) rest is recorded in history books
(C) rest is well known
(D) rest is archaic

[GATE 2016 : IISc Bangalore (EC Set – 2, ME Set - 3)]

Q.98 A generic term that include various items of clothing such as a skirt, a pair of trousers and a shirt is

(A) Fabric (B) Textile
(C) Fibre (D) Apparel

[GATE 2015 : IIT Kanpur (CSE Set - 2, EE Set - 2)]

Q.99 Which of the following is CORRECT with respect to grammar and usage?

Mount Everest is _____.

(A) The highest peak in the world
(B) Highest peak in the world
(C) One of highest peak in the world
(D) One of the highest peak in the world

[GATE 2016 : IISc Bangalore (EC Set - 1)]

Q.100 There was no doubt that their work was thorough.

Which of the words below is closest in meaning to the underlined word above?

(A) Pretty (B) Complete
(C) Sloppy (D) Haphazard

[GATE 2017 : IIT Roorkee (IN, CE Set – 2)]

Q.101 Ram and Shyam shared a secret and promised to each other that it would remain between them. Ram expressed himself in one of the following ways as given in the choices below. Identify the correct way as per standard English.

(A) It would remain between you and me.
(B) It would remain between I and you
(C) It would remain between you and I
(D) It would remain with me.

[GATE 2015 : IIT Kanpur (EC Set - 3, ME Set - 2)]

Q.102 Match the columns :

Column 1	**Column 2**
(1) Eradicate	(P) Misrepresent
(2) Distort	(Q) Soak Completely
(3) Saturate	(R) Use
(4) Utilize	(S) Destroy Utterly

(A) 1:S, 2:P, 3:Q, 4:R
(B) 1:P, 2:Q, 3:R, 4:S
(C) 1:Q, 2:R, 3:S, 4:P
(D) 1:S, 2:P, 3:R, 4:Q

[GATE 2014 : IIT Kharagpur (CSE Set -2, EE Set-2)]

Q.103 The following question presents a sentence, part of which is underlined. Beneath the sentence you find four ways of phrasing the underlined part. Following the requirements of the standard written English, select the answer that produces the most effective sentence.

Tuberculosis, together with its effects, ranks one of the leading causes of death in India.

(A) Ranks as one of the leading causes of death
(B) Rank as one of the leading causes of death
(C) Has the rank of one of the leading causes of death
(D) Are one of the leading causes of death

[GATE 2015 : IIT Kanpur (EC Set - 1]

Q.104 A rewording of something written or spoken is a _____.

(A) Paraphrase (B) Paradox
(C) Paradigm (D) Paraffin

[GATE 2016 : IISc Bangalore (CE Set - 1)]

Which of the following options is closest in meaning to the word given below

Q.105 **VERNACULAR**

(A) Faulty speech
(B) Language of a locality
(C) Foreign accent
(D) Gibberish

Q.106 Newspapers are a constant source of delight and recreation for me . The _____ trouble is that I read _____many of them.

(A) only , quite (B) even , too

(C) only , too (D) even , quite

[GATE 2019 : IIT Madras (EE)]

Q.107 A student is required to demonstrate a high level of **comprehension** of the subject, especially in the social sciences. The word closest in meaning to **comprehension** is

(A) Understanding (B) Meaning

(C) Concentration (D) Stability

[GATE 2014 : IIT Kharagpur (CE Set - 1)]

Q.108 Choose the statement where underlined word is used correctly.

(A) When the teacher eludes to different authors, he is being elusive

(B) When the thief keeps eluding the police, he is being elusive

(C) Matters that are difficult to understand, identify or remember are allusive

(D) Mirages can be allusive, but a better way to express them is illusory

[GATE 2015 : IIT Kanpur (ME Set - 3, IN]

Which of the following options is closest in meaning to the word given below

Q.109 **Puerile**

(A) Humorous (B) Virtuous

(C) Childish (D) Whimsical

Q.110 John Thomas an _____ writer , passed away in 2018.

(A) Eminent (B) Imminent

(C) Prominent (D) Dominant

[GATE 2019 : IIT Madras (ME)]

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A Answer Keys

Verbal Ability & Verbal Grammar (VA VG)									
1.	C	2.	B	3.	B	4.	A	5.	B
6.	A	7.	D	8.	B	9.	C	10.	C
11.	B	12.	A	13.	A	14.	D	15.	C
16.	B	17.	A	18.	D	19.	A	20.	B
21.	C	22.	A	23.	D	24.	C	25.	A
26.	C	27.	D	28.	C	29.	B	30.	C
31.	B	32.	A	33.	B	34.	C	35.	C
36.	B	37.	D	38.	B	39.	A	40.	A
41.	B	42.	C	43.	A	44.	C	45.	D
46.	B	47.	A	48.	A	49.	A	50.	B
51.	C	52.	C	53.	B	54.	A	55.	C
56.	A	57.	D	58.	D	59.	B	60.	B
61.	C	62.	C	63.	B	64.	B	65.	B
66.	A	67.	B	68.	C	69.	C	70.	B
71.	C	72.	A	73.	B	74.	C	75.	C
76.	A	77.	A	78.	C	79.	C	80.	D
81.	B	82.	A	83.	C	84.	B	85.	D
86.	C	87.	A	88.	C	89.	C	90.	C
91.	B	92.	A	93.	B	94.	A	95.	C
96.	C	97.	C	98.	D	99.	A	100.	C
101.	A	102.	A	103.	A	104.	A	105.	B
106.	C	107.	A	108.	B	109.	C	110.	A

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Space for Notes